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No. 2914. SATURDAY, NOVEMBER 4, 1916. **Price 6d.**

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An Address
ON
THE POSSIBLE FUNCTIONS OF THE CEREBRO-SPINAL FLUID.

Delivered before the Neurological Section of the Royal Society of Medicine.

By W. D. HALLIBURTON, M.D., F.R.S.,
Professor of Physiology, King's College, London;
President of the Section.

So much has within recent years been written about the cerebro-spinal fluid that I must apologize for my want of originality in selecting that subject for this address. But however hackneyed the subject, we are still far from possessing complete knowledge as to the functions and significance of the fluid. From the pathological as well as from the physiological point of view, we at least know that this remarkable fluid is one of the greatest importance, and its careful examination in many diseases has yielded results of inestimable value. During the last few years it is a subject at which I have myself worked, and I have been fortunate in securing as my collaborator such a skilful and accurate experimenter as my colleague Professor W. E. Dixon, F.R.S.

One cannot work at any subject for any length of time without speculating beyond actually observed data. It is the safest rule to keep ideas of this nature to oneself, but there are some occasions when it is permissible to speak rather more freely; this is one of them. I happen to be the unworthy occupant of a presidential chair, and for an hour or less I shall be free from contradiction and criticism, so I propose to inflict upon you during that time some speculations, and have only safeguarded myself in the title of this address by alluding to the functions of the fluid as possible rather than probable. As my colleague Dixon is away on war service, I have had no opportunity of discussing the matter with him, so that if I say anything that is wildly improbable he, at any rate, is free from responsibility.

May I, after this preface, proceed next to another chapter, which is also of a prefatory character, and state as shortly as I can the present state of our knowledge regarding the characters, composition and fate of the fluid? The fluid, as you know, is, under normal conditions, as clear as water and of low specific gravity; it contains in solution inorganic salts similar to those in the blood plasma, a trace of coagulable protein, and a certain amount of a reducing substance which has now been definitely proved to be glucose; it is practically free from formed elements. Under various abnormal conditions the protein matter may be largely increased, or other substances than the usual ones may be added to it, such as cholesterol and choline (or a choline-like substance). It may further have added to it various kinds of cellular structures, the differentiation between which is a valuable aid in diagnosis, and in other cases parasites of different sorts may be found. The fluid is primarily formed by the secreting cells which are so prominently found covering the choroid plexuses in the cerebral ventricles, so that this structure may be appropriately designated, as Mott first suggested, the choroid gland. The fluid is normally present at a certain pressure, and this pressure is not the result of arterial pressure passively transmitted to the fluid. The cerebro-spinal pressure, it is true, may be affected by changes in the arterial and venous pressures, but it is not dependent on them; and it may and often does vary quite independently of these. The true cerebro-spinal pressure is the result of the secretory pressure of the choroid epithelium cells. In other words, the cranio-spinal contents cannot any longer be regarded as a fixed quantity without the power of expanding or contracting in volume.

The rate of flow and the pressure of the fluid can be readily investigated in animals by placing a cannula in the subcerebellar cisterna and connecting it with the necessary apparatus. It is then found that there are three groups of substances which promote the flow and increase the pressure independently of those which affect it secondarily by altering the blood pressure. The first group consists of excess of carbon dioxide (or lack of oxygen) in the blood, as in asphyxia, and drugs which interfere with respiration. The second group is that of the volatile anaesthetics, which may act by interfering with the respiration or by altering the physical conditions of secretion. The third group is specific, and consists of an extract of the choroid gland, or of the brain. The former is the more powerful. The chemical nature of the hormone in this extract is uncertain, but it is probably some product of nervous metabolism which, arising in the brain, passes to the choroid plexuses, accumulates there, and stimulates the secreting cells to activity; it cannot be discovered in the normal secretion, but in cases of general paralysis and brain softening—conditions in which catabolic processes are excessive—it can be recognized (by physiological tests) in the fluid itself. The choroid plexuses are abundantly provided with nerves, but there is no evidence that these are secretory in nature; indeed the evidence derived from experiments with atropine and similar alkaloids points in the opposite direction. The hormone, whatever its nature, acts probably not on nerves, but on the secreting cells directly.

There is no doubt that this fluid is being continually formed, and the next question is, What becomes of it? Large quantities of a neutral fluid, such as physiological saline solution, disappear within a few minutes when introduced into the cranio-vertebral cavity, and the course taken by such fluids, and presumably also of the normal cerebro-spinal fluid, can be traced by adding some substance which can be easily recognized by its colour, or by chemical tests, or by its physiological action. Using such methods it has been demonstrated that the exit is by the blood stream and not by the lymph channels of the nerves, which was formerly thought to be the case by a number of French observers.

If such substances are readily diffusible the speed with which they appear in the blood is very remarkable, especially if they are introduced into the subcerebellar region. An injection, for instance, of adrenaline, nicotine, or atropine produces typical physiological actions within a few seconds, in fact, almost as rapidly as if the injection had been made into the venous circulation direct.

On the other hand, substances which are not readily diffusible (such as commercial peptone) do not produce their characteristic effects when they are introduced into the cerebro-spinal fluid, so that one of the older theories, that actual valved orifices exist leading into the large veins at the base of the brain, must be abandoned.

The diffusion process is most rapid in the subcerebellar district, but is extremely slow in the spinal, especially the lower spinal region.* It probably occurs into the venous sinuses by the microscopic arachnoid villi described by Weed. There is also a possibility that, in addition to this, transference may occur through the thin walls of the blood vessels within the central nervous system, for, as Mott has pointed out, contact of these vessels with the cerebro-spinal fluid is maintained throughout their extent by the perivascular spaces which are continuous with the subarachnoid cavity. Diffusion in the opposite direction from blood to cerebro-spinal fluid does not occur except in an almost negligible degree in the case of a few drugs, such as alcohol and urethane.

But, in addition to this, there is another and minor communication between the fluid and the other parts of the body. Dixon and I found that dyes added to the fluid travel along the course of certain cranial nerves, and this is especially true for the olfactory nerve. This is not the case for the spinal nerves; no dye can be detected in their sheaths outside the spinal canal, and no dye is discernible in the lymph of the thoracic duct. I have spoken of this cranial (olfactory) outlet as a minor one, but clinical experience has shown that it is not a negligible one. For this loophole affords an opportunity for the entry of infective agents, as Flexner has shown in the causation of infective poliomyelitis.

Such, then, is a brief and, I fear, imperfect summary of the present state of our knowledge, and I propose now to pass to the main object of my address, which is to discuss the meaning and functions of the fluid we are dealing with.

* This is tacitly accepted by those who produce spinal anaesthesia by the injection intrathecally of substances of the cocaine group, for they recognize the danger of absorption if the drug reaches the medullary region.

In the first place, it can hardly be doubted that the presence of fluid within and around the structures of the central nervous system fulfils certain mechanical functions of support and pressure. That, however, does not explain why ordinary lymph would not do just as well, as it does in the majority of other organs. The relationships, however, of the brain and cord within a closed cavity are peculiar, and it may be that ordinary lymph is here insufficient to maintain a more or less constant pressure. For the pressure of ordinary lymph is wholly dependent on blood pressure; here, in addition, we have an independent pressure—namely, the secretory pressure of the choroidal secreting cells, and it is therefore quite possible that this may come into play in maintaining, equalizing, and adjusting those pressure relationships which are most advantageous for the well-being and function of the brain and cord. It is further quite possible that the ameliorative effects not infrequently noticed as a result of withdrawal of the cerebro-spinal fluid by lumbar puncture may be due to the relief of cerebral pressure. But such considerations offer no explanation of the peculiar composition of the fluid. Its characteristic chemical composition must have a deeper meaning.

It is very common to speak of the cerebro-spinal fluid as the lymph of the brain. Let us now examine this phrase more fully, and see if it has any scientific accuracy.

In the first place, we must be quite clear as to what lymph is, and what it does. It is a fluid which exudes through the thin walls of the blood capillaries. Whether lymph formation depends solely on physical conditions (filtration and osmosis), or whether in addition we have as a factor a secretory activity of the vascular lining membrane, is an interesting physiological problem which need not concern us now. The leakage fluid resembles blood plasma in its composition, except that it is comparatively poor in protein material, the diffusion of which through membranes is so difficult. This lymph, when formed, acts as the intermediary or middleman between the blood and the tissue elements, conveying to the latter, on the one hand, the oxygen and nutritive substances they need; and, on the other hand, it is into the lymph primarily that the tissues pour the waste products of their activity, and thus these are started on their journey to the organs of excretion (lungs, kidneys, etc.). The very essence of a lymph is that it should be in free communication, except for an intervening membrane, with the blood stream, and that this membrane should be equally permeable to water and other substances in both directions. The arrangement of the perivascular and perineuronal spaces, filled as they are with cerebro-spinal fluid, certainly resembles that of a lymphatic system, and therefore it is not surprising that the idea has caught on that cerebro-spinal fluid plays in the central nervous system the rôle of lymph. The peripheral nerves have a true lymphatic system analogous to that found in other organs, but anatomists are far from unanimous on the question whether the central nervous system possesses real lymphatic channels apart from the system of intercommunicating spaces occupied by cerebro-spinal fluid. The mere difficulty of discovering true lymph vessels does not indeed finally negative their existence, but until they are satisfactorily demonstrated we may provisionally assume that they are absent. If, then, cerebro-spinal fluid is the only fluid which actually comes into contact with the tissue elements of the brain and cord it necessarily follows that it must play the part played by lymph in other districts of the body; it must be, for example, the intermediary medium which is traversed by the oxygen on its way from blood to the tissue elements; and oxygen we know is essential for the continuance of nervous life and energy. Furthermore, it must be the vehicle by which other nutriment reaches the cells and fibres of nervous tissue. The next point is, Have we any evidence that the products of nerve catabolism pass into the fluid from the tissue elements as they do into ordinary lymph? If it were only possible to analyse and compare the composition of the fluid before it enters the perineuronal spaces, and after it leaves them, it would be possible to answer this question authoritatively, but in the absence of such proof one can only argue from probabilities. Seeing that the fluid is the only one available for the purpose, an affirmative answer seems inevitable, and this is supported by the fact that cerebro-spinal fluid is rich at any rate in one waste product—namely, carbon dioxide.

The expression "lymph of the brain" is therefore so far justifiable. But we have absolutely no proof that the cerebro-spinal fluid is in part an exudation from the blood, and it is in the origin of the fluid that the analogy between lymph and cerebro-spinal fluid breaks down. Whatever views we may hold as to whether a secretory factor comes into play in the production of ordinary lymph (and, at the best, such a factor can only be an insignificant one), we can have no hesitation in proclaiming that cerebro-spinal fluid is a true secretion arising in a definite glandular structure. Such a fluid must obviously be the best one for maintaining normal life in the nerve cells, and the whole lining membrane of the spaces in which it resides appears to co-operate with the choroid gland in maintaining its constancy of composition, and to militate against the escape into it of substances from the blood stream, such as drugs or poisons, which would be foreign to the fluid or harmful to the delicate and sensitive structure which it bathes.

We have seen that the essential feature of a true lymph is the free interchange between it and the blood in both directions. This essential character is lacking in the cerebro-spinal fluid; in all probability the lining membrane of the cerebro-spinal spaces is permeable to substances passing from it into the blood, but it appears to be impermeable (except for oxygen) in the direction from the blood to the fluid. The nutritive materials the fluid contains appear to be formed in the choroid gland, and not to be merely exuded from the blood stream; otherwise one cannot explain why the protein it contains is not similar to that in the blood or in exudations (lymph) formed from the blood.

If, as Weed has suggested, cerebro-spinal fluid is partly formed as ordinary lymph is by exudation from the blood in the perivascular spaces, it is difficult to understand why readily diffusible drugs and poisons do not escape readily into the cerebro-spinal fluid as they do into ordinary lymph. The difficulty is quite intelligible when we regard the choroidal epithelium as a stalwart barrier of cells which keeps back these materials, and only allows its own normal secretion to escape. This useful work would be undermined and frustrated if the general lining were easily permeable to foreign substance.

Camus found that barium chloride, which is a very active poison to the central nervous system, will kill a rabbit of 2 kg. weight when $\frac{1}{10}$ mg. is introduced into the subarachnoid space, whereas the lethal dose is one thousand times greater when this salt is given subcutaneously. It is well known that anaphylaxis can be produced by smaller doses of proteins administered into the brain than when given elsewhere. The use of salvarsan in locomotor ataxy and similar post-syphilitic affections via the cerebro-spinal fluid has been abandoned, as it is fatal not only to the syphilitic organisms, but also to the patient. It is further known that salvarsan and its homologues are of little or no use in tabes and general paralysis when it is given by the ordinary channels, for in these later manifestations of syphilis the baneful spirochaete has got into a harbour of refuge (which we may speak of as extravascular) beyond the reach of the poison. The stalwart epithelial layer lets none escape, and does not realize how much both doctor and patient would rejoice if it could be made to understand that in this instance at least it did not form such an effective barrier.

May I add, in way of parenthesis, how very desirable it is that chemists and pharmacologists should apply themselves to the solving of this difficulty? The future treatment of tabes and allied conditions should aim at the discovery of some blander arsenic compound which could be introduced straight into the cerebro-spinal fluid and kill the syphilitic organism in its lair without at the same time slaying the host who harbours it.

Is not the very simplicity of the normal fluid suggestive? I remember when I was a student that normal or physiological saline solution was regarded as a physiological fad, for surgeons continued to use sponges—usually dirty ones at that time—soaked in water during operations. What a change has now come over the spirit of their dream! They have realized that water, even clean water, is a protoplasmic poison, and that osmosis is a real force and not a negligible phenomenon. I remember at about the same date witnessing, and in a humble measure assisting, Dr. Sydney Ringer in his epoch-making work on the effects of saline mixtures on living structures. The attitude of

the profession generally in those days was a tolerant one—just the sort of attitude adopted by a grandfather indulgently watching his descendants playing with their toys. But who has not heard of Ringer's solution to-day? Who can write a paper on almost any physiological or pathological subject without mentioning it or alluding to the part it has played in his investigations?

Ringer's fluid is the ideal physiological salt solution; its saline constituents are present in the same proportion as they occur in the natural body fluids, and in that way the normal osmotic pressure is maintained when living structures are bathed in it. Ringer's original solution resembled frog's blood in its saline composition, but since then several modifications have been introduced. The most important of these is the one we owe to Locke, who has altered the proportion of the various salts (increasing, for example, the amount of sodium chloride from 0.6 to 0.9 per cent.), so that the fluid may be employed with success on the living tissues of the mammal. Locke has also added a small proportion of the sugar glucose, and when in use it is kept saturated with oxygen. It is well known that in such a fluid living structures can be preserved in a living condition for hours, or even days and weeks. Locke's most striking results have been obtained with the mammalian heart; this can be kept beating for prolonged periods after its complete isolation from the body if it is perfused with the oxygenated fluid. The salts supply the normal stimulus to the cardiac fibres and maintain their physical integrity; the sugar acts as a source of energy and is consumed as activity continues.

Ringer's fluid, so compounded in the laboratory, is somewhat more than thirty years old. But in reality it is as old as the hills, or rather as man himself. Just as the Venus of Milo existed potentially from past ages in the block of marble from which it was ultimately hewn, so does Ringer's fluid exist in the blood and lymph, although its simple composition is obscured there by admixture with the blood proteins and corpuscles.

Here may I introduce another parenthesis and allude to another physiological puzzle, and that is the significance of the large amount of protein in the blood plasma and lymph? The meaning and use of the blood corpuscles we understand, or at least we think we do, but the meaning of so large a quantity of protein in the blood fluid and the part it plays in nutrition is still hidden from us. The amount of protein necessary for the repair of the tissues is not great, and the modern doctrine of maintenance and growth is that the tissues help themselves, not from proteins directly, but from the various amino-acids which are the result of protein cleavage. The great protein store may be another instance of the prodigality of Nature in providing a large margin for conditions of weakness and stress. However this may be, the presence of protein is not necessary, or it may even be harmful when it is added to Ringer's or Locke's solutions in experiments with perfused organs.

But to resume the thread of our argument. Thanks to Ringer some thirty years ago, physiologists were provided with a suitable fluid for experimental work, but the choroidal epithelium knew the secret of extracting it from the blood for untold ages before Ringer was born. For what, after all, is cerebro-spinal fluid but Locke's modification of Ringer's fluid?

The view I have been led to take is—the nervous mechanism being so sensitive, so easily influenced by anything unusual—that therefore the neurons must be bathed in an ideal physiological saline solution to maintain their osmotic equilibrium; the trace of protein it contains is probably quite sufficient for nutritive processes, and is no doubt the kind of protein particularly suited to repair the small amount of wear and tear which is the result of nervous action. The sugar, just as in Locke's solution, would serve for a supply of energy. The choroidal epithelium, in its wise choice of a suitable circumambient medium for the neurons, is really exercising a protective function. In order to keep out harmful proteins (toxins and the like), the comparatively harmless ones are kept back also, almost completely; all share the same process of exclusion. This protective action applies in addition to the majority of soluble drugs; this, as we have seen, may operate so as to be detrimental in diseased conditions. But we can hardly expect discrimination on the part of the epithelial secreting cells. The non-access of metallic and other poisons to the nervous elements is such a *sine qua non* for their health, that during those periods when such substances are given for the relief of disease, or the slaughtering of parasites, the choroidal cells are unable to change their habits and so do not allow the drugs to get through.

Such, I believe then, is the real significance of the simple composition of this remarkable secretion. But I must allude, in conclusion, to some other possible additional functions which the fluid may exercise.

The late Dr. Gaskell approached the question from the embryological and developmental point of view; he held that the neural tube represents an ancestral digestive canal, and those who adopt Gaskell's hypothesis might conceivably argue that the cerebro-spinal fluid is the representative of a primitive digestive juice, and is secreted by an organ which was formerly a digestive gland. However interesting such speculations may be, one can hardly suppose that any one could seriously urge that the cerebro-spinal fluid retains any such functions to-day.

Dendy is one of many comparative anatomists who have not accepted Gaskell's views, and he has suggested that the important function fulfilled by the choroid plexuses is that of an intracerebral gill, and is concerned in respiration. The structure of the plexuses is certainly gill-like, but it is always unwise to argue from mere anatomical resemblances. Mott, who analysed the gases of cerebro-spinal fluid, found the quantity of carbon dioxide there very high (about 60 per cent.), and there is, therefore, something to be said in favour of the respiration hypothesis. It is quite possible that the choroidal epithelium may allow the escape of, or even actively excrete, this catabolic product, and it is unnecessary to point out how severe a poison any undue accumulation of carbon dioxide is in the central nervous system. Coupled with this fact is another I have previously mentioned—namely, that carbon dioxide is one of the most potent means of promoting a flow of the fluid. Just as urea is the best diuretic and bile the best cholagogue, so carbon dioxide is one of the most powerful cerebral lymphagogues.

One further point and I have done. The ependyma is lined by ciliated epithelium. Some doubt exists, I believe, as to whether the cilia are functionally active. But if we admit they are, the question arises—In what direction do they act? This is a question which is hardly susceptible of actual observation in man or the higher animals, but in the Amnocaetes, which Professor Dendy has so largely used in his investigation, he has brought forward evidence which shows that the movement is in a forward direction. I know it is not always wise to draw conclusions from such lowly animals and apply them without reserve to the higher ones. There are certain cases where such deductions are quite impossible; for instance, in some of the humble fishes the central canal of the spinal cord does not terminate blindly at its posterior extremity, but opens out by an orifice into the surrounding tissues.

In this case one can only speculate, and the rapidity of absorption of the fluid in the forward regions in comparison with that in the spinal district appears to favour Dendy's surmise, and the cilia, if they are active, would no doubt further the flow of fluid from the cord region to the large veins at the base of the brain, where it so readily leaves the subarachnoid space by entering the venous blood stream.

There are doubtless other problems in connexion with the cerebro-spinal fluid that demand solution, but my task for this evening is over. My main object has been to present the thesis in which I feel there is, at any rate, some truth—namely, to regard the cerebro-spinal fluid as the perfect physiological medium, more perfect doubtless than the artificial fluids we can make in the laboratory, but in its essential features closely resembling those associated with the names of Ringer and Locke.

I think already I have said finally, or in conclusion, more than once, but will you pardon me if, like the proverbial writer of sermons, I say it a third time, and this is really my concluding sentence? These are days of specialization, but however necessary specialization in medical science may be it has its attendant evils. Particularly regrettable is the divorce between those who pursue their investigations by the bedside and those who work in the laboratory. Neurology specially is a branch of our science in which an attempt should be made to bring about a closer *rapprochement* between the two sets of workers.

Speaking personally, I have derived inestimable benefit from meeting with and hearing here the clinical side of the subject. Those responsible for the management of this section of the Royal Society of Medicine have realized this, and in having elected this year a president who is a laboratory person they have shown that they see the value of the *entente* I have alluded to; and I can only trust that my year of office may not be detrimental to those who form the larger contingent in the Neurological Section—namely, those who pursue more specially the study of disease by the bedside.

INCIDENCE AND TREATMENT OF ENTAMOEBA HISTOLYTICA INFECTION AT WALTON HOSPITAL.

By CLIFFORD DOBELL, M.A.,
LECTURER ON PROTISTOLOGY, IMPERIAL COLLEGE OF SCIENCE.

(*Report to the Medical Research Committee.*)

SINCE the beginning of March, 1916, I have made a number of protozoological examinations of the stools of military patients in the New Zealand 2nd General Hospital, Walton-on-Thames. These examinations were made, in the first place, in order to detect carriers of *Entamoeba histolytica*. Detected carriers were then, whenever possible, treated; and during and after treatment I examined their stools at frequent intervals in order to ascertain the results. All the results so obtained, as far as they have any interest, are embodied in this report. It deals with the first 200 men examined at Walton, and five others sent there for treatment—205 cases in all. Upon these I have made more than 800 examinations.

Although I alone have been responsible for the examinations, on which the results here recorded are based, the investigation was only made possible by the cordial co-operation of the hospital staff. To Lieutenant-Colonel Myers, N.Z.A.M.C., now A.D.M.S. to the New Zealand Expeditionary Force, and to Lieutenant-Colonel Mill, N.Z.A.M.C., his successor in command at the Walton Hospital, I am indebted for permission to publish the results, and for the helpful interest they have taken in the work throughout. To Lieutenant Matthews, N.Z.A.M.C., who was directly in charge of the treatment of the cases, I owe the clinical details which he has kindly allowed me to include. The co-operation of Miss F. M. Durham, while acting as assistant pathologist to the hospital, alone made it possible for me to make the examinations at a distance. Miss Durham also most kindly undertook to extract from case sheets, and by personal questioning of patients, such details of clinical history as I am able to give. The work of examining the specimens has all been done at the Wellcome Bureau of Scientific Research. To Dr. A. C. Stevenson and other members of the staff I owe my best thanks for their hospitality and for much kind assistance in various ways. The investigation has been carried on by aid of a grant from the Medical Research Committee. Dr. H. H. Dale, of their staff, suggested the trial of emetine bismuthous iodide (Du Mez), of which the successful results are here recorded, and has shown constant interest in this phase of the investigation. To all I gratefully acknowledge my obligations.

The Protozoological Findings.

Examination of the stools of patients at Walton has given the following results:

Number of men infected with –		
Entamoeba histolytica	22 =	11%
Entamoeba coli	84 =	40.9%
Giardia (= *Lamblia*) *intestinalis* ...	40 =	19.5%
Chilomastix (= *Tetramitus*) *mesnili* ...	16 =	7.8%
Trichomonas hominis	5 =	2.4%
Isospora sp.	1 =	0.48%

It must be explained that the number of cases at Walton infected with *E. histolytica* has been much higher than that given above, because for some time past carriers have been sent there for treatment. These men, of whom there have been altogether about a dozen, were detected as carriers in another series of examinations undertaken by Dr. A. C. Stevenson and myself. Their inclusion in the present series would therefore give a disproportionate value for the percentage of infection with *E. histolytica*. But as 5 of these imported cases have now been treated—forming part of the series of treatments here recorded—I have included them as supernumeraries, and left them out of account in calculating the percentage of men infected with *E. histolytica*. There are thus 27 cases (22 belonging to Walton, with 5 supernumeraries) of *E. histolytica* infection dealt with in this report. The 22 cases were found in the routine examinations of 200 men, and the percentage infected is therefore 11. In considering the infections with other protozoa, however, I have included the infections found in the 5 supernumeraries; so that these infections are calculated from 205 men.

It should be emphasized that the figures given denote the minimal number of men infected. It is not possible to be certain that a man does not harbour any given protozoon unless he has been examined repeatedly. One or two examinations are not sufficient. It is not only possible, but even probable, that of the 178 men here included as uninfected with *E. histolytica*, some at least are really infected, for 29 of these have been examined only once, and 65 only twice. The rest have been examined three or more times. If it had been possible to examine all these cases many times, it is almost certain that all the percentages would have been much higher.

Incidence of Infection with E. histolytica in Men of Different Classes.

All the men examined are New Zealanders who had served, as far as I can ascertain, in Egypt and Gallipoli before coming to England. They have thus all passed from a non-endemic into an endemic, and back again into a non-endemic centre of amoebic dysentery. I have therefore examined whenever possible not only those who entered Walton for dysentery, but also those entering for gunshot wounds and other complaints, since all appear to have been similarly exposed to infection with *E. histolytica*.

Of the 200 Walton men examined, 130 entered hospital for dysentery, enteric, or other intestinal ailments, or for debility following these; whereas 70 were in hospital for wounds or complaints other than intestinal. Of the 22 men infected with *E. histolytica*, 11 belong to the first category, and 11 to the second. Among the intestinal cases 90 entered for dysentery (or debility following) or persistent diarrhoea. Of these, 9 were found infected with *E. histolytica*. There were thus 13 infections among the 110 non-dysenteric patients (including among these many cases of intestinal disorder). These facts may be better appreciated as percentages, as follows:

Percentages of Cases Infected with E. histolytica.	
Intestinal cases	8.2 per cent.
Dysenteric cases	10.0 ,,
Non-dysenteric cases	11.8 ,,
Non-intestinal cases	15.7 ,,

The facts speak for themselves. They clearly show the importance of examining all men, not merely the dysenterics or suspected dysenterics, returning to England from a centre of amoebic infection. Obviously the number of men examined has been small, but it can hardly be regarded as insignificant. On the other hand, exact significance cannot be attached to the percentages, as the probable error in these is large.

I have ascertained that most of the men infected with *E. histolytica* (27 cases) have histories of dysentery, or acute diarrhoea, contracted at some time during their sojourn in the Mediterranean area. At least 2, however, and probably 4, have no such history, and have therefore been regarded as contact carriers—not convalescent carriers like the others. Reliable information on this subject is almost impossible to obtain in many cases, the testimony of the men themselves being all there is to go upon. With this reservation the character of the infection in the 27 cases studied may be stated as follows:

Ordinary convalescent carriers	22 cases
Contact carriers	4 ,,
Acute dysentery	1 case

All these cases were treated at Walton except one (No. II), who was sent elsewhere to be treated for syphilis, and whom I have been unable to follow. Case No. III received special treatments which will be noted separately later.

The remaining 25 cases constitute the main series upon which the treatments now to be described were carried out.

FIRST SERIES.

Emetine Hydrochloride Hypodermically.

In this series I include all those cases which were originally treated with emetine hydrochloride hypodermically. Each man received 11 to 14 grains of emetine in daily doses of one grain. In some instances the injections were given on consecutive days; in others they were given every day for a week, and then every other day until the full amount had been administered. In several cases which received 13 or 14 grains, two, and in 2 cases more than two, days elapsed between the final injections. In all cases, however, with one exception, not less than 12 grains in all were given.

I examined the stools of all the patients every few days, both during and after treatment, for as long a period as possible. By doing so I found that out of 21 patients treated with emetine hydrochloride no fewer than 14 (that is, two-thirds) had not been cured of their infection. The remaining 7 cases were discharged as cured on the evidence summarized in the following table.

TABLE I.

Case No.	Treatment with Emetine Hydrochloride.			Consecutive Negative Examinations.	
	Begun.	Ended.	Total Quantity Given.	Dates (1916).	Total No.
V	Apr. 1	Apr. 15	12 grains	Apr. 6, 10, 18, 19, 24, 28; May 1	7
VI	Mar. 26	Apr. 7	12 ,,	Apr. 3, 6, 10, 24; May 2	5
VII	Apr. 8	May 2	13 ,,	May 3, 8, 14, 26	4
IX	Mar. 20	Apr. 3	12 ,,	Apr. 1, 3, 4, 5, 6, 7, 10, 12, 24, 26	10
X	May 15	May 26	12 ,,	May 18, 23, 25; June 13, 19	5
XV	May 21	May 31	11 ,,	May 25; June 1, 8, 21	4
XVII	Apr. 1	Apr. 15	12 ,,	Apr. 4, 10, 17, 18, 24, 28	6

Of the 14 cases which were not cured by emetine hydrochloride, 5 showed no improvement whatsoever. These were Cases VIII, XI, XIII, XVIII, XIX, all of which were found to be passing cysts of *E. histolytica* every time they were examined both during and after treatment.

The other 9 uncured cases passed no cysts or amoebae (that is, were negative) for some time during or immemediately after treatment. They then relapsed (that is, were found to be positive—passing cysts or amoebae) at varying intervals of time after treatment. The facts about these 9 cases are given in the following table.

TABLE II.

Case No.	Treatment with Emetine Hydrochloride.			Consecutive Negative Examinations.		First Positive Examination after Treatment.
	Begun.	Ended.	Total Quantity Given.	Dates (1916).	Total No.	
I	Apr. 9	Apr. 30	14 gr.	Apr. 14, 18, 24	3	May 1
IV	Apr. 27	May 8	12 ,,	May 1, 8	2	May 11
XII	Apr. 13	May 5	14 ,,	Apr. 14, 18, 19, 24, 26	5	May 8
XIV	Apr. 2	Apr. 27	14 ,,	Apr. 10, 11, 14, 15, 18, 24	6	May 1
XVI	Apr. 27	May 8	12 ,,	May 8, 11, 14	3	May 24
XX	May 30	June 10	12 ,,	June 4, 12, 19	3	June 26
XXI	June 13	June 24	12 ,,	July 3	1	July 7
XXII	July 5	July 16	12 ,,	July 17	1	July 20
XXIII	July 5	July 16	12 ,,	July 10, 17	2	July 20

The facts given in Table II clearly show that negative examinations made during and immediately after treatment cannot be relied upon as an indication that a cure has been effected. Nine out of the 14 uncured cases were found negative at this period, the number of negative examinations made on the individuals ranging from one to six. On a system which requires only three consecutive negative examinations to establish a "cure," at least 5 of the infected cases—and probably more, if the examinations had been made more often—could have been discharged.

It will be seen from Table II that the time which elapsed between the end of treatment and the date when a relapse was found to have occurred differs in different cases. These times may be summed up as follows:

Case I had relapsed on the 1st day after treatment.
Case IV ,, ,, 3rd ,, ,,
Case XII ,, ,, 3rd ,, ,,
Case XIV ,, ,, 4th ,, ,,
Case XVI ,, ,, 16th ,, ,,
Case XX ,, ,, 16th ,, ,,
Case XXI ,, ,, 13th ,, ,,
Case XXII ,, ,, 4th ,, ,,
Case XXIII ,, ,, 4th ,, ,,

Such facts as the above will have to be taken into account when considering the *times* when negative examinations are of value for the establishment of a "cure."

The first series of treatments with emetine hydrochloride subcutaneously may now be conveniently summarized.

Altogether, twenty-one men infected with *E. histolytica* were treated. Of these, fourteen were *not* cured of their infection after a course of 12 to 14 grains of emetine. The other seven were discharged as cured after having 11 to 13 grains, followed by four to ten negative examinations extending over a period of at least two to three weeks *after* treatment.

Whether all the seven "cured" cases are really freed from infection or not remains, I think, open to doubt. It is quite possible that some of them at least might have relapsed if they had been examined for a longer time. Circumstances, however, have not permitted this. But on the other hand, what is quite certain, and open to no doubt at all, is that 66.6 per cent. of the cases treated with emetine hydrochloride were definitely not cured. This percentage relates to 14 cases made up as follows:

Convalescent carriers ... ... 11 cases
Contact carriers ... ... 2 ,,
Acute dysentery ... ... 1 case

SECOND SERIES.

Emetine Bismuth Iodide.

It was now decided to try whether emetine bismuth iodide would succeed where emetine hydrochloride had failed. The results obtained about this time at the Chichester Military Hospital seemed sufficiently promising to justify hopes of success.[1] Through the kindness of Dr. H. H. Dale, F.R.S., a sufficient quantity of the double iodide was supplied to Walton Hospital by the Medical Research Committee; and thanks to the collaboration of the medical officers at the hospital, a second series of trial treatments was now begun.

For this series the 14 men unsuccessfully treated with emetine hydrochloride formed the material. Of these, 11 were treated at once with a full course of emetine bismuth iodide. The other 3 were each given a second full course (12 grains) of emetine hydrochloride hypodermically, so that they constitute a control for comparison with the cases treated with the double iodide.

The double iodide of emetine and bismuth, which is given by the mouth on a full stomach, was administered in cachets containing 1 grain each, thrice daily, until 36 grains had been taken.[2] Lieutenant Matthews informs me that in a few cases the daily dosage was reduced on account of the vomiting which was produced; but he adds that he has found it best to "persist with the drug in full doses, as tolerance is usually established in a couple of days. Tolerance is not established nearly so early if the dosage is reduced on account of vomiting." "On the whole the drug was well tolerated."

Most of the patients experienced more or less nausea during treatment, but with several it was slight, and in only one case was vomiting frequent and severe. (This was Case XXI, who had previously had two full courses of emetine hydrochloride. Treatment with the double iodide was begun only two days after the second hypodermic treatment, so that it seems not improbable that the severe effects produced were due to emetine poisoning.) All the cases suffered more or less from diarrhoea during treatment, one case (No. XIII) having as many as fourteen to sixteen motions daily. In all cases, however, the diarrhoea

seems to have disappeared after treatment. This effect of the drug is probably beneficial, as the constant emptying of the colon would serve to remove amoebae—both dead and alive—and prevent the accumulation of faecal matter in healing ulcers.

The results of treatment with emetine bismuth iodide far surpassed the most sanguine expectations. Of the 11 men so treated, every one became negative (that is, ceased to pass cysts or amoebae) within a few days of beginning treatment, and all remained negative for as long as I was able to continue examining them. In some cases the examinations have been numerous, and have extended over a considerable period. The results are summarized in Table III:

TABLE III.

Case No.	Treatment with Emetine Bismuth Iodide.			Consecutive Negative Examinations.	
	Begun.	Ended.	Total Quantity Given.	Dates (1916).	Total No.
I	June 27	July 8	36 gr.	June 29; July 4, 7, 12, 17, 20, 25, 27, 31	9
IV	June 27	July 8	36 gr.	June 29; July 3, 7, 10, 12, 17, 20, 23, 27, 31	10
XI	June 28	July 9	36 gr.	July 4, 10, 12, 17	4
XII	June 27	July 8	36 gr.	June 29; July 3, 7, 11, 13, 17, 20, 26; Aug. 9	9
XIII	June 27	July 8	36 gr.	July 3, 7, 10, 12, 17, 20; Aug. 8, 17, 28	9
XIV	June 28	July 9	36 gr.	June 29; July 5, 10, 12, 17, 20, 25, 27, 31	9
XVI	July 8	July 20	36 gr.	July 12, 17, 20, 25; Aug. 2, 7, 11, 15, 17, 23, 25, 29	12
XVIII	June 27	July 8	36 gr.	July 3, 7, 10, 12, 17, 20, 23, 27; Aug. 1	9
XIX	July 24	Aug. 4	36 gr.	July 28; Aug. 1, 4, 8, 11, 15, 17	7
XXII	July 25	Aug. 6	36 gr.	July 27, 31; Aug. 4, 7, 11, 15	6
XXIII	July 25	Aug. 6	36 gr.	July 27, 31; Aug. 4, 7, 11, 15	6

Case XI is the least satisfactory of those given in this table, for he had only four negative examinations, and was last examined on the eighth day after treatment. It is therefore uncertain whether he is really cured. (He is a wounded man discharged from the army. I have not yet succeeded in following him up.) Cases XIX, XXII, and XXIII are also, perhaps, somewhat doubtful; for although they have each had six or seven negative examinations, these cover rather less than a fortnight of the period immediately following treatment. (These cases were then discharged as cured and I was unable to continue examining them.) It may be recalled, however, that Cases XI and XIX had previously remained positive throughout the whole period of their treatment with emetine hydrochloride; whereas Cases XXII and XXIII had become negative for a very brief period, and had then both relapsed four days after treatment ended. The results of treatment of these four cases with the double iodide are therefore, though not conclusive, at all events extremely promising, and very much better than those obtained earlier with emetine hydrochloride.

For the other seven cases treated with the double iodide —namely, Cases I, IV, XII, XIII, XIV, XVI, XVIII—something more than a promising result can, I think, be fairly claimed. Each of these has had a long run of consecutive negative examinations extending over a period of more than three weeks since the end of treatment. The two cases which I have been able to follow for the longest time *—namely, Nos. XIII and XVI—have now remained negative for fifty-one and forty days respectively since they had their last dose of double iodide, or for eight weeks and seven weeks respectively if the period during treatment is taken into account. It may, I think, be reasonably assumed that all these seven men are now no longer infected with *Entamoeba histolytica*.

I would add that all the cases were examined very thoroughly before being pronounced negative—far more carefully and for a much longer time than is possible in an ordinary routine examination. I expected that some at least would relapse, and therefore could not easily convince myself that I was mistaken.

* The last three examinations were made on Case XIII after he had left Walton. I was able to make two of these myself through the courtesy of Captain C. Banks, R.A.M.C., whilst for the third I am indebted to Mr. W. O. Redman King, who kindly made it for me.

THE CONTROL SERIES.

Re-treated with Emetine Hydrochloride.

It has already been noted that 3 of the 14 cases which failed to get cured in the first series of treatments (emetine hydrochloride) were not given the double iodide at the same time as the 11 men just considered. These three men (Nos. VIII, XX, XXI) were given a second full course each of emetine hydrochloride hypodermically (1 grain daily for twelve consecutive days). The results of this second treatment were as follows: Nos. XX and XXI, who had both become negative for a short time during their first treatments, now showed no improvement whatsoever during their second courses. Both were found to be passing cysts every time they were examined during and after treatment. Case VIII, who had previously remained positive throughout his first course, ceased to pass cysts three days after his second treatment had begun; but later, after remaining negative for some time, he relapsed. His record is shown in the following table:

TABLE IV.

Case No.	Treatment with Emetine Hydrochloride (2nd Course).			Consecutive Negative Examinations.		First Positive Examination after Treatment.
	Begun.	Ended.	Total Quantity Given.	Dates (1916).	Total No.	
VIII	June 27	July 8	12 gr.	June 29; July 3, 7, 10, 14, 17	6	July 20

It will be evident from Table IV that a relapse was detected twelve days after treatment had ended. This case is again instructive from the point of view of negative examinations, and the number of them necessary to establish a "cure."

The results of the second series of treatments may now be summarized. Of fourteen men—all of whom had previously been treated hypodermically with emetine hydrochloride—eleven were treated with emetine bismuth iodide per os; whilst the other three received a second full course of the hydrochloride. The men of the first lot (double iodide) are all, more or less certainly, cured; those of the second lot (hydrochloride) were certainly none of them cured.

THIRD SERIES.

Treatment of the Uncured Controls with Double Iodide.

Since the treatment with emetine bismuth iodide appeared to have brought about a cure in every case in which emetine hydrochloride had previously failed; and since the three cases (controls) treated with a second course of emetine hydrochloride had again none of them been cured: it only remained, as a final test of the efficacy of the double iodide, to treat these three still uncured cases with it and to ascertain the results. Unfortunately, one of these three cases (No. VIII) was sent away from Walton before he could be treated; but the other two remained, and were treated at once with the double iodide. I have fortunately been able to examine them both for a considerable time. Their stories are summarized in the following table:

TABLE V.

Case No.	Treatment with Emetine Bismuth Iodide.			Consecutive Negative Examinations.	
	Begun.	Ended.	Total Quantity Given.	Dates (1916).	Total No.
XX	July 25	Aug. 5	36 gr.	July 28; Aug. 1, 4, 7, 11, 15, 16, 18, 21, 22, 23, 24, 25, 28, 29, 30	16
XXI	July 21	Aug. 4	36 gr.	July 25, 27, 31; Aug. 4, 9, 15, 17, 18, 21, 22, 23, 25, 28, 29, 30	15

From the evidence given in this table it appears almost certain that both these men are now no longer infected with *E. histolytica*. In other words, both the cases which two full courses of emetine hydrochloride completely failed to cure, have now been cured by a single course of the double iodide.

FOURTH SERIES.

Fresh Cases Treated with Emetine Bismuth Iodide Only.

After such successful results had been obtained with the double iodide treatment, no further cases were treated with emetine hydrochloride at Walton. As fresh carriers of *E. histolytica* were detected, they were at once treated with the double iodide—in every case with success, so far as could be judged. Circumstances have prevented me from making a protracted series of examinations of these cases after treatment; but I have particulars now of four of them which are worthy of record. They are given in the following table:

TABLE VI.

Case No.	Treatment with Emetine Bismuth Iodide.			Consecutive Negative Examinations.	
	Begun.	Ended.	Total Quantity Given.	Dates (1916).	Total No.
XXIV	July 11	July 24	36 grains	July 13, 17, 21, 23, 27; Aug. 1	6
XXV	July 22	Aug. 2	36 ,,	July 28; Aug. 1, 4, 8, 11, 15	6
XXVI	Aug. 4	Aug. 15	36 ,,	Aug. 5, 7, 11, 14, 15, 16, 28, 29, 31	9
XXVII	July 31	Aug. 10	36 ,,	Aug. 3, 11, 17, 24	4

Although these treatments appear to have been successful, it will be seen that the longest period after treatment during which any case was followed was only sixteen days (Case XXVI). Nevertheless, as all the other cases which I have been able to follow, after treatment with the double iodide, have consistently remained negative to the last, there are, perhaps, reasonable grounds for regarding these four additional cases as cured and for justifying their discharge, which has now taken place. It may be added that two of the above cases (XXV and XXVI) had never been treated previously with emetine in any form, while the other two (XXIV and XXVII) appear to have had emetine injections about a year previously whilst suffering from dysentery in the Mediterranean area. They were all supposed to be cured and healthy men (except XXVI, who was in hospital for wounds) until I found they were passing cysts of *E. histolytica*.

Additional Notes on the Cases Treated with Emetine Bismuth Iodide.

Several of the cases described in this report present features of interest which have not yet been mentioned. These will now be dealt with as briefly as possible.

CASE I.—This man has already figured in the tables as one of those not cured with emetine hydrochloride (Table II) and subsequently cured with the double iodide (Table III). Between these two courses he was treated for syphilis, receiving mercury (liq. hydrarg. perchlor. 1½ drachms daily) from May 6th to June 27th. I examined him several times during and repeatedly after this mercury treatment, and so ascertained that it had had no effect upon any of the protozoa with which he was infected (*Entamoeba histolytica*, *E. coli*, and *Lamblia*). These findings seem worthy of record. I have regarded this case as a contact carrier. He entered hospital for gunshot wounds, has no official history of dysentery or previous emetine treatment, and denies that he has ever had any dysenteric symptoms or even acute diarrhoea.

CASE III.—Has not figured in any of the tables. I have not included him in the general series of treatments, because he has been treated in so many ways that it is impossible to ascribe his cure to any one treatment. Before going to Walton he had suffered from dysentery, and been treated repeatedly with emetine injections; but was still passing cysts of *E. histolytica* when I first examined him. His treatments at Walton include more emetine hydrochloride (without success); rectal injections of quinine and tannin; appendicostomy, followed by irrigations of the large intestine; and finally emetine bismuth iodide *per os*. He has now had a long series of negative examinations, and appears to be completely cured; but how far each treatment has been responsible for this happy result can never be decided.

CASE IV is the only case of acute dysentery in the series. His treatments have already been given in the tables (II and III). He belonged to the Maori Contingent, and contracted dysentery in Gallipoli. At Walton subsequently (although he did not enter for this) he was found to be suffering from a persistent acute, or subacute, infection with *E. histolytica*. He had six to nine motions daily, often containing blood and large numbers of amoebae. When his condition was detected he was treated with a full course of emetine hydrochloride hypodermically (Table II), this being the first emetine treatment he had ever had. After receiving 12 grains (one daily for twelve successive days) he was found to be passing blood and amoebae again three days after treatment. One often hears that emetine "acts like a charm" in acute amoebic dysentery. In this case it appears to have acted as charms too often act. It certainly did not act like a specific drug.

After this first emetine treatment, the man's condition was no better than before. He continued to have many motions a day—often containing blood, mucus, and amoebae—and complained of severe abdominal pain, for which he was given morphine suppositories (⅛ grain) once or twice daily. Before beginning treatment with the double iodide (Table III) he had been in this chronic dysenteric state for five or six months. He was very ill and depressed, and expected to die. During his double iodide treatment he was strictly dieted. He vomited during the first two days. His stools were not examined on the first day; but on the second I found that all amoebae had disappeared, and no amoebae or cysts have since been found. After treatment, he gradually returned to ordinary diet. His faeces became normal and formed, and he had only one (or two) motions daily. Clinically, he has made a wonderful recovery, and is now quite well and healthy.

This case is of great interest, for it not only demonstrates the great superiority of the double iodide of emetine over the hydrochloride in a particular instance of acute dysentery, but it shows also that there are acute cases which are practically incurable with hypodermic treatment, but which can, nevertheless, be quickly cured with the double iodide.

CASES VII, XVI, and XXIV had suffered from dysentery and been treated with emetine hypodermically before going to Walton. No. XVI is especially interesting because, after his earlier treatments, he had twice previously been discharged from hospital as cured and not a carrier. In addition to emetine, he had also had rectal injections of silver nitrate and morphine; also salol and paraffin. At Walton, however, he was found to be passing large numbers of cysts of *E. histolytica*. (His treatments are given in Tables II and III.)

CASES XII, XIII, XV, XVIII, XXV, XXVI, had all suffered at some time from dysentery; but none of them had been treated with emetine before going to Walton, and some have no record of dysentery in their papers. Case XVIII is specially interesting in this connexion. He has no official history of dysentery, but his real history is that of a common type of convalescent carrier.

CASES V, X, XI, XXII, XXIII, have no history of dysentery, and had never previously had emetine injections. On being questioned, they all said they had suffered more or less from diarrhoea—which was not treated—in Gallipoli. None of them except No. X (enteric convalescent) entered Walton for intestinal disorders.

Information concerning the remaining cases is too meagre or commonplace to be worth recording.

The obvious suggestion is often made that those cases which fail to get cured with hypodermic emetine treatment are those which have previously been treated, and whose amobae have consequently become resistant to emetine. It will be seen from the foregoing notes, however, that in the cases here considered there is no appreciable difference—in the behaviour towards emetine—between those treated and those untreated previously; and all have behaved in precisely the same way towards emetine given as the double iodide.

Emetine Bismuth Iodide a Specific for Entamoeba histolytica.

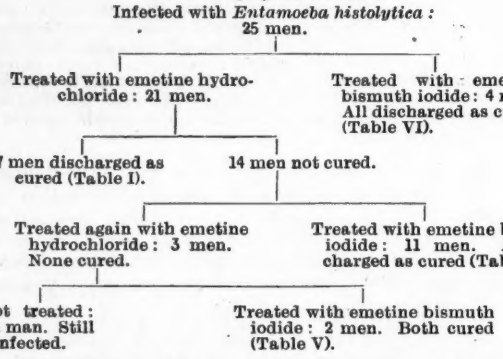
The effects of the administration of the double iodide upon the protozoal content of the stools—which are the effects that have especially come under my own observation—are truly remarkable. Within four days of the commencement of treatment all stages of *Entamoeba histolytica*, whether amoebae or cysts, have completely vanished from the faeces, and in no single instance have they been subsequently found. When it is remembered that some of the cases had been found to be passing cysts in large numbers almost every time they had been examined previously—for weeks, and in some cases for months—it will cause no surprise when I say that the results of the double iodide treatment have appeared to me astounding.

Many of the men treated with the double iodide were infected with *Entamoeba coli*, *Lamblia*, and *Chilomastix*, and in no case has the treatment removed any of these protozoa. As a rule *E. coli* disappears from the faeces during treatment, but it almost invariably reappears afterwards. *Lamblia* and *Chilomastix* are quite unaffected by the double iodide, though the diarrhoea produced by the drug often causes the appearance of the free flagellates, in addition to the cysts, of these forms in the faeces.

It seems, therefore, that in emetine bismuth iodide we have a specific drug which, whilst unpleasant to the patient, is very deadly to *E. histolytica*, but harmless to the other protozoa of the human bowel.

In conclusion, I add a summary in tabular form of all the cases whose treatment has been described in this report. It will show at a glance, I think, not only all the results obtained, but also the great success achieved in the treatment of *E. histolytica* infections with emetine bismuth iodide at Walton Hospital.

Summary of Treatments.


Infected with Entamoeba histolytica: 25 men.
Treated with emetine hydrochloride: 21 men.
Treated with emetine bismuth iodide: 4 men. All discharged as cured (Table VI).
7 men discharged as cured (Table I).
14 men not cured.
Treated again with emetine hydrochloride: 3 men. None cured.
Treated with emetine bismuth iodide: 11 men. All discharged as cured (Table III).
Not treated: 1 man. Still infected.
Treated with emetine bismuth iodide: 2 men. Both cured (Table V).

It should be noted in the above table "discharged as cured" cannot be regarded as synonymous with "certainly cured." The hospital authorities found it necessary to discharge some of the patients as early as seven or eight days after treatment was finished; whereas I have recorded above cases in which relapse (reappearance of cysts) occurred as late as sixteen days after conclusion of treatment. The shortest negative period after the end of treatment which can safely be regarded as indicating a "certain" cure can therefore be hardly less than about three weeks.

Taking twenty-one days as such an arbitrary limit, and describing cases which have remained negative for this interval or longer after treatment as "certain" cures, we may rearrange the above results as follows:

	Treated with Emetine Hydrochloride.	Treated with Emetine Bismuth Iodide.
Total number of treatments ...	24	17
Number of "certain" cures ...	5	9
Number of uncertain cures ...	2	8
Number of relapses	17	0

REFERENCES.

[1] See Dale, Treatment of Carriers of Amoebic Dysentery, etc., *Lancet*, July 29th, 1916. [2] Cf. Dale, *loc. cit.*; Low and Dobell, Three Cases of *Entamoeba histolytica* Infection treated with Emetine Bismuth Iodide, *Lancet*, August 19th, 1916.

NOTE ON SOME EXAMINATIONS AND TREATMENTS FOR ENTAMOEBA HISTOLYTICA INFECTIONS.

BY

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(Report to the Medical Research Committee.)

THE examinations here reported were conducted at the Central Laboratory of the Eastern Command, at the Kitchener Hospital, Brighton, and extended over a period from February to August, 1916. The men examined were 426 intestinal cases invalided home from the Mediterranean Expeditionary Force in October–November, 1915, who had been treated in various ways at other hospitals before coming to Brighton. The clinical diagnosis was given for 357 of them; of these, 153 were dysenterics and 204 non-dysenterics.

The three commonest human intestinal protozoa were found as follows:

Entamoeba coli:

Alone	76 cases
With *E. histolytica*	10 ,,
With *Lamblia intestinalis*	16 ,,
With *E. histolytica* and *L. intestinalis* ...	8 ,,
	110 cases

= 25.8 per cent. total cases.

Lamblia intestinalis:

Alone	53 cases
With *E. coli*	16 ,,
With *E. histolytica*	4 ,,
With *E. coli* and *E. histolytica*	8 ,,
	81 cases

= 19 per cent. total cases.

Entamoeba histolytica:

Alone	11 cases
With *E. coli*	10 ,,
With *L. intestinalis*	4 ,,
With *E. coli* and *L. intestinalis*	8 ,,
	33 cases

= 7.75 per cent. total cases.

These numbers are certainly lower than the actual infections. Although some 1,850 examinations were made on the 426 cases—that is, an average of over four per case—only 280 cases actually had as many as three examinations each, and it is daily becoming more evident that a small number of examinations will not detect these protozoal infections in every case.

The E. histolytica Carriers.

No acute case of dysentery was examined during this period. The carriers were found both among men diagnosed clinically as dysenterics and those invalided for other intestinal disorders; but a considerably larger proportion of the former were found to be infected with *E. histolytica*. The carriers were treated with hypodermic injections of emetine hydrochloride—10 to 12 gr. being considered a full course, given in single daily injections of 1 gr. each—and examined every two or three days during treatment, and for as long as possible afterwards. When possible they were only discharged as cured when examinations for three weeks from the end of treatment had been negative. It is not worth while considering more than twenty-three of the cases in detail, owing to lack of data concerning the others; this will include all those satisfactory from this point of view. Of these, twenty men at the Kitchener Hospital and one officer at the Howard Home, Brighton (No. 15),[1] had full courses of emetine as defined above, and nine of these were discharged as cured on the observations given in Table I.

TABLE I.

Case No.	Treatment.			Consecutive Negative Examinations.	
	Begun.	Ended.	Amount Given.	Dates, 1916.	No.
15	May 21	June 1	12 gr.	June 2, 9, 17 (relapsed June 21)	3
	July 6	July 15	10 gr.	July 15, 24, 27, 29, 31	5
18	Aug. 5	Aug. 17	12 gr.	Aug. 10, 16, 19, 23, 25, 28, 30; Sept. 1, 4, 6, 8, 11	12
19	Aug. 5	Aug. 16	12 gr.	Aug. 14, 15, 18, 20, 23, 25, 28, 30; Sept. 1, 4, 6, 8	12
29	Aug. 9	Aug. 20	12 gr.	Aug. 16, 23, 25, 28; Sept. 1, 4, 6, 8	8
31	July 24	Aug. 2	10 gr.	Aug. 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 28	11
35	Aug. 5	Aug. 16	12 gr.	Aug. 16, 18, 20, 22, 24, 26, 29, 31; Sept. 2, 5, 7	11
36	Aug. 9	Aug. 25	14 gr.	Aug. 29, 31; Sept. 2, 7, 9, 12, 14, 16, 19, 21	10
37	July 24	Aug. 2	10 gr.	July 31; Aug. 7, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 29, 31	14

* I have cast these results in tables of the same form as those given by Dobell, in order to facilitate comparison.

One other case (No. 14) had been negative for a month after two small courses before his full course of 10 grains, after which he was negative for another month before discharge. The authorities decided to discharge Nos. 15 and 29 less than three weeks after the end of their treatment. No. 15 had only been negative for a fortnight after his second course, and as his relapse was not detected until twenty days after his first course, his cure may be considered exceedingly doubtful. No. 29 was discharged nineteen days after the end of treatment.

Twelve cases relapsed before the end of the three weeks' examination after treatment, as shown in Table II.

[1] I am indebted to Major D. G. Hall, R.A.M.C., for information regarding the history and treatment of this case.

TABLE II.

Case No.	Treatment.			Consecutive Negative Examinations.		Date of Relapse (1916).
	Begun.	Ended.	Amount Given.	Dates (1916).	No.	
12	Aug. 5	Aug. 16	12 gr.	Aug. 5, 7, 9	3	Aug. 8
16	Aug. 5	Aug. 16	12 gr.	Aug. 12, 15, 23, 25, 28, 30	6	Sept. 1
21	Aug. 5	Aug. 16	12 gr.	Aug. 14, 16, 19	3	Aug. 8
23	Aug. 6	Aug. 17	12 gr.	Aug. 22, 26, 29, 31	4	Sept. 2
25	July 24	Aug. 2	10 gr.	July 31; Aug. 1, 5, 7, 9, 11, 13, 15, 19	9	Aug. 21
28	July 24	Aug. 2	10 gr.	July 31	1	Aug. 7
32	Aug. 5	Aug. 16	12 gr.	Aug. 7, 8, 14, 16, 18, 20, 24, 26, 29	9	Aug. 31
33	Aug. 5	Aug. 16	12 gr.	Aug. 14, 16, 19, 21, 23, 24, 25	7	Aug. 28
34	Aug. 5	Aug. 16	12 gr.	Aug. 8, 10, 12, 14, 16, 18, 20	7	Aug. 22
38	Aug. 10	Aug. 21	12 gr.	Aug. 19, 21, 23, 25; Sept. 1, 4	6	Sept. 6
39	Aug. 12	Aug. 23	12 gr.	Aug. 24, 26, 29	3	Aug. 31
40	Aug. 12	Aug. 23	12 gr.	Aug. 17, 18, 21, 23, 25, 28	6	Aug. 30

The other two cases were not given as much as 10 grains of emetine. No. 17 was discharged as cured after seven ½ grain doses, and No. 30 relapsed after a course of 8 grains. Table III gives the records of these two cases.

TABLE III.

Case No.	Treatment.			Consecutive Negative Examinations.		Date of Relapse.
	Begun.	Ended.	Amount Given.	Dates (1916).	No.	
17	June 29	July 8	3½ gr.	June 5, 17, 20, 27; July 3, 8, 14	7	
30	June 25	July 19	8 gr.	July 22, 24, 27, 31; Aug. 7, 8	6	Aug. 10

The authorities found it necessary to discharge No. 17 a week after the end of his treatment, so that his case must remain open. He had a very small infection, which, it is interesting to note, was not detected until the sixth examination; he had been negative again for some time before his treatment began.

After the injection of at least 10 gr. of emetine hydrochloride, then, 12 out of 21 cases—that is, 57 per cent.—were certainly not permanently freed from *E. histolytica*. In one case (No. 12) the drug had no visible effect on the infection, the three negative examinations appearing in Table II probably being one of the natural negative periods often occurring in this patient. In all the other cases the treatment was followed by a longer or shorter negative period, and subsequently a relapse.

TABLE IV.

Case No.	After Emetine.	Day when First Found Negative.	Date of Detection of Relapse after End of Treatment.
15	12 gr.	First after end of treatment	Twentieth day.
16	12 gr.	Eighth day of treatment	Sixteenth day.
21	12 gr.	Tenth day of treatment	Fourth day.
23	12 gr.	Fifth after end of treatment*	Sixteenth day.
25	10 gr.	Eighth day of treatment	Nineteenth day.
28	10 gr.	Eighth day of treatment	Fifth day.
32	12 gr.	Third day of treatment	Fifteenth day.
33	12 gr.	Tenth day of treatment	Twelfth day.
34	12 gr.	Fourth day of treatment	Sixth day.
38	12 gr.	Tenth day of treatment	Sixteenth day.
39	12 gr.	First after end of treatment	Eighth day.
40	12 gr.	Sixth day of treatment	Seventh day.

* Not examined between eleventh day of treatment and this date.

A similar distribution of first negative examinations holds among the cases that did not relapse within three weeks.

The table shows that there may be a good deal of variation in the time elapsing before the disappearance and reappearance of the cysts in the stools. The interval before the detection of the latter must be kept in mind when fixing the criterion for discharge as cured. In only one case (No. 18) were there any troublesome sequelae to the injections. This patient had a fairly severe local swelling and a rash, and complained of feeling sick and giddy. Although rather more than half of the cases were certainly not cured, these results would seem to be good compared with other records of emetine treatment under similar conditions—*cf.* Dobell, where two-thirds of the cases were certainly not cured, and 5 out of the 14 "showed no improvement whatsoever" under emetine treatment.

Permanent clearance of *E. coli* and *Lamblia* was not observed in any case. The latter seems quite unaffected by emetine given hypodermically, and no special treatment was undertaken for its elimination in the absence of any conclusive evidence for its pathogenicity. *E. coli* sometimes disappears during treatment.

Acknowledgements.

In conclusion, I would express my thanks to Captain J. R. Dickson, R.A.M.C., pathologist of the Central Laboratory, for his constant interest in this work, and for the trouble he has taken in making arrangements for the examination and treatment of these cases, finally undertaking the latter himself. I am indebted to Mr. A. G. Thacker for all records since I left Brighton on August 18th. My thanks are due to Dr. C. M. Wenyon (now Lieutenant-Colonel, R.A.M.C.), and to Dr. A. C. Stevenson, of the Wellcome Bureau of Scientific Research, for very kindly allowing me to use the resources of their laboratory, where I have always received the kindest assistance. I cannot sufficiently thank Mr. C. Dobell for the very kind way in which he has always been ready to give invaluable instruction and advice throughout the year, for which I have never hesitated to ask, and without which the shortcomings of this work would have been multiplied exceedingly. My thanks are also due to Lieutenant-Colonel Coutts, R.A.M.C., Officer Commanding the Kitchener Hospital, for his permission to publish this account of the cases in his hospital.

A SEARCH FOR DYSENTERY CARRIERS AMONG SOLDIERS COMING FROM GALLIPOLI AND EGYPT.

BY

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THIS investigation was undertaken, at the instance of Colonel Sir William Leishman, with the object of attempting to determine the extent to which men coming from countries in which dysentery is endemic are likely to be dysentery carriers. It is well known that a small percentage of those who have suffered from dysentery act, after convalescence, as carriers, and the possibility of those who have not suffered from an attack of dysentery, but have been in a district in which dysentery is endemic, serving as carriers must also be borne in mind.[1]

The faeces of fifty soldiers who had reached France after service in Gallipoli and Egypt were examined for entamoebae and dysentery bacilli (Table I). The soldiers were chosen at random in the medical wards of the hospital, no attempt at selection being made. Seventeen out of the 50 had not had a previous attack of dysentery; the remaining 33 stated that they had suffered from previous attacks and had been admitted to hospital, passing blood and slime. Nine cases were admitted with a diagnosis of dysentery, and in one of these (No. 33, Table I) it was stated that *B. dysenteriae* (Flexner) had been isolated from the stools. All the patients examined, with a single exception (No. 17, Table I), had been in districts (Gallipoli and Egypt) in which dysentery was known to be endemic.

The faeces obtained for examination were in all except three cases either firm and well formed or semi-liquid and dark brown or yellowish in colour, with or without scybala, the latter resulting from the administration of a purgative—in other words, the faeces presented no abnormal change of pathological import. The exceptions were as follows: Case 31 (diagnosis dysentery), in which

TABLE I.—*Examination of Faeces of Fifty Soldiers in Hospital who had served in Districts in which Dysentery is Endemic.*

No.	Duration of Service. In Gallipoli.	Duration of Service. In Egypt.	Locality in which Previous Attack of Dysentery Occurred.	Diagnosis at Time of Examination.	Pathogenic Organisms Isolated from Faeces.
1	4½ mths.	—	No previous attack	Malaria	—
2	3 ,,	7 mths.	,, ,,	Bronchitis	—
3	3½ ,,	8 ,,	,, ,,	Acute parenchymatous nephritis	—
4	8 ,,	3 ,,	,, ,,	Bronchitis	—
5	1 ,,	7½ ,,	,, ,,	Gunshot wounds	Inagglutinable *B. dysenteriae* (Shiga).
6	4 ,,	6 ,,	,, ,,	Cardiac	—
7	5 ,,	5 ,,	,, ,,	Dysentery (two days' duration)	—
8	—	12 days	,, ,,	Dysentery	*B. paratyphosus* B.
9	—	1 mth.	,, ,,	Diarrhoea	—
10	—	3 weeks	,, ,,	Bronchitis	—
11	—	2 mths.	,, ,,	,,	—
12	—	4 ,,	,, ,,	Influenza	—
13	—	3 ,,	,, ,,	,,	—
14	—	3 ,,	,, ,,	,,	—
15	—	7 days	,, ,,	Diarrhoea	*B. typhosus.*
16	—	4½ mths.	,, ,,	Malaria	—
17	—	—	,, ,,	Dysentery	Inagglutinable *B. dysenteriae* (Shiga).
18	2 mths.	6 mths.	Gallipoli	Shell shock	—
19	1 ,,	9 ,,	,,	Influenza	—
20	4 ,,	10 ,,	,,	Tumour of lung	—
21	1 ,,	3 ,,	,,	Erythema nodosum	—
22	7 ,,	2 ,,	,,	Malaria	—
23	3 ,,	6 ,,	,,	Bronchitis	—
24	4 ,,	6 ,,	,,	Mumps (convalescent)	—
25	3 mths.	5 mths	Gallipoli.	Shell shock	—
26	6 ,,	2 ,,	,,	Malaria	—
27	5 ,,	8 ,,	,,	Pyrexia	—
28	3 ,,	5 ,,	,,	Shell shock	—
29	3½ ,,	22 ,,	,,	Pneumonia	—
30	4 ,,	7 ,,	,,	Pyrexia	*B. dysenteriae* (Strong).
31	3 ,,	5 ,,	,,	Dysentery	—
32	4 ,,	5 ,,	,,	,,	—
33	5 ,,	4 ,,	,,	Dysentery (convalescent)	—
34	—	4 ,,	Egypt	Gastritis and influenza	—
35	—	5 ,,	,,	Bronchitis	—
36	—	6 ,,	,,	Influenza	—
37	—	7 ,,	,,	,,	—
38	—	7 ,,	,,	Myalgia	—
39	—	1 ,,	,,	Influenza	—
40	—	7 ,,	,,	Dyspepsia	—
41	—	7 ,,	,,	Enteritis	—
42	—	3 weeks	,,	? Colitis	—
43	—	5 days	,,	Dysentery	—
44	—	1 mth.	,,	Gall stones	—
45	—	10 days	,,	Influenza	—
46	—	6 mths.	Mediterranean	Dysentery	—
47	—	3 days	,,	,,	—
48	8 mths.	4 mths.	New Zealand	Tonsillitis	—
49	—	5 days	Queensland	Malaria	—
50	2 weeks	7 mths.	Lemnos	Gastritis	—

Remarks.

No. 19: Lambliae present in faeces.
No. 21: Faeces examined on three occasions.
No. 28: Streptococci present in faeces.
No. 31: The discharge from bowel consisted of pus, blood, and slime in faeces; three specimens were examined.
No. 33: *B. dysenteriae* (Flexner) reported isolated from faeces.
No. 34: Streptococci present in faeces.
No. 41: Discharge from bowel consisted of blood-stained slime; three specimens of faeces were examined.
No. 42: Lambliae present in faeces.
No. 46: Streptococci present in faeces. In this case and in Case 47 a previous attack of dysentery occurred in the Mediterranean, two days after leaving Alexandria.
No. 50: Lambliae present in faeces.

the discharge from the bowel consisted of pus; Cases 32 (diagnosis dysentery) and 41 (diagnosis enteritis), in which blood and slime were being passed, and the disease was clinically dysentery at the time of examination; in all these cases there was a history of previous attacks of dysentery. It will be noted that in seven other cases, which had been admitted with a diagnosis of dysentery, no blood or slime was present in the faeces examined; in three of these cases (Nos. 7, 8, and 17) there was no history of a previous attack of dysentery; in four cases (Nos. 33, 43, 46, and 47) a history of previous attacks of dysentery was given.

In none of the cases could entamoebae, motile or encysted, be recognized in the faeces. Encysted lambliae, it may be observed, were found in three cases (Nos. 16, 42, and 46).

The bacteriological examination of the faeces was carried out according to the scheme adopted by Henderson Smith,[2] the cultural characters on nine different media (gelatine, lactose, mannite, glucose, saccharose, peptone, inulin, arabinose, and litmus milk), together with the motility and agglutinative reaction—to seven antiserums: *B. dysenteriae* (Shiga), *B. dysenteriae* (Flexner), *B. dysenteriae* Y, *B. typhosus*, *B. paratyphosus* A, *B. paratyphosus* B, and *B. enteritidis* (Gaertner)—being noted.

In no case could an agglutinable *B. dysenteriae* (Shiga) or *B. dysenteriae* (Flexner) be obtained; if these bacilli were present in the faeces examined they must have been in such small numbers, relatively, that they escaped recognition throughout the series. In one case (No. 30) a bacillus probably identical with *B. dysenteriae* (Strong) was isolated.* In two cases (Nos. 5 and 17) an inagglutinable bacillus corresponding in culturable characters to *B. dysenteriae* (Shiga) was obtained; in the first case the patient's own serum agglutinated in a dilution of 1 in 200; in the second no agglutination occurred with the patient's own serum, even in a dilution of 1 in 50.

Other pathogenic organisms were discovered incidentally: in Case 8, *B. paratyphosus* B was isolated; in Case 15, *B. typhosus*; in Cases 14 and 2 bacilli allied to Morgan's bacillus No. 1 and *B. paratyphosus* A respectively were found. The cultural and agglutinative characters of these bacilli are given in Table II, which contains also those of four other allied types, not known to be pathogenic, which were isolated, three (Nos. 9, 21, and 32) being late lactose fermenters.† Table II, it will be observed, exhibits in Nos. 15, 2, and 9 the co-agglutinative power of the serum employed.[3] The serums were used in half the maximum dilution with which agglutination could be obtained.

Streptococci were abundant in the faeces of Cases 28, 34, and 46; the pathological significance of these bacteria is as yet undetermined.

Cases 5, 17, and 30 may be regarded as carriers. No other carriers could be recognized among the fifty men examined (excluding Cases 15 and 8, which, though carriers at the time of examination, do not belong to the

* Agglutination of this bacillus with Shiga, Flexner, and Y serums was obtained in 1 in 50 dilution, but not in 1 in 150 dilution.
† Two of the strains isolated produced gas in inulin, but no acid.

TABLE II.—*Cultural and Agglutinative Characters of Bacilli Isolated from Faeces.*

No.	Bacillus Isolated from Faeces.	Lactose.	Gelatine.	Mannite.	Glucose.	Saccharose.	Litmus Milk.	Indol.	Motility.	Inulin.	Arabinose.	Agglutination Tests. Control.	Shiga 1 : 2000.	Flexner 1 : 3000.	Y, 1 : 1000.	Typhoid 1 : 4000.	Paratyphoid A, 1 : 6000.	Paratyphoid B, 1 : 8000.	Gaertner 1 : 4000.
42	—	0	0	0	0	0	A	0	0	0	0	0	0	0	0	0	0	0	0
14	—	0	0	0	0	0	0, then alk.	0	+	0	0	0	0	0	0	0	0	0	0
5	Inagglutinable Shiga	0	0	0	A	0	A, then alk.	0	0	—	A	0	0	0	0	0	0	0	0
17	Inagglutinable Shiga	0	0	0	A	0	A, then alk.	0	0	—	A	0	0	0	0	0	0	0	0
15	*B. typhosus*	0	0	A	A	0	A	0	+	0	A	0	0	slight	slight	+	0	0	0
30	*B. dysenteriae* (Strong)	0	0	A	A	A	slight A	0	0	0	A	0	0	0	0	0	0	0	0
8	*B. paratyphosus* B	0	0	A G	A G	0	A, then alk.	0	+	0	A G	0	0	0	0	0	0	+	0
2	—	0	0	A G	A G	0	A	0	0	0	A G	0	0	slight	+	0	0	0	0
9	—	A G	0	A G	A G	0	A, late C	0	0	G	A G	0	0	0	0	0	+	0	+
21	—	A G	0	A G	A G	A G	A	0	+	0	A G	0	0	0	0	0	0	0	+
32	—	A G	0	A G	A G	A G	A	0	0	G	A G	0	0	0	0	0	0	0	+

A = Acid; G = gas; C = clot. The concentration of serum employed is of one-half the maximum dilution capable of giving macroscopic agglutination in two to four hours at 37° C.

dysentery group). Neither entamoebae nor dysentery bacilli of the Shiga or Flexner type could be found in the stools of patients 32 and 41, who were undoubtedly suffering from subacute attacks of true dysentery, the dejecta containing abundance of slime and blood during the period of examination.

It would seem that when soldiers who have had dysentery are admitted into a base hospital the condition of their intestinal tract is ordinarily normal or rapidly becomes so, any dysenteric lesions quickly subsiding. The results of the above investigation emphasizes the danger of troops who are dysenteric subjects bringing dysentery into this country by the agency of carriers. The risk would presumably be greater among men leading a more arduous existence, conducing to a recrudescence of their malady, such as obtains in camp life at the front, and it appears desirable that further examinations should be made under the latter conditions.

In conclusion, I desire to express my indebtedness to Major Sidney Rowland for the constant advice and assistance which I have received from him throughout the course of this investigation.

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[1] Ledingham and Arkwright, *The Carrier Problem in Infectious Disease*, London, 1912. [2] The Identification of the Pathogenic Members of the Typhoid-Colon Group of Bacilli, BRITISH MEDICAL JOURNAL, July 3rd, 1915, p 1. [3] *Cf.* H. Chick, The Preparation and Use of Certain Agglutinating Sera, *Lancet*, 1916.

NOTE UPON A CASE OF JAUNDICE FROM TRINITROTOLUOL POISONING.

BY

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BEFORE the war began the attention of the Home Office had already been drawn to the occurrence of poisoning among the men employed in the manufacture of high explosives belonging to the group of the nitro-derivatives of benzene and toluene, and in 1909 the Home Office issued regulations which were to be observed in the manufacture of these compounds. It was not, however, till the extended use of these bodies for war purposes began that it was realized that the handling of the finished product was also dangerous. The poison affects the persons employed in different manners, but it seems to be probable that no one is completely immune. The commonest symptoms are drowsiness, headache, and nausea, and to these are commonly added some degree of cyanosis, due probably to the conversion of the oxyhaemoglobin of the erythrocytes into methaemoglobin. Most of the workers show some of these symptoms in a greater or less degree, but fortunately the majority recover quickly and even gain some tolerance to the poison. Among the severer cases high grades of anaemia, methaemoglobinaemia, and jaundice occur, and of the cases of jaundice a proportion prove fatal. Another group of symptoms, which may be termed local rather than constitutional, is the occurrence on the exposed surfaces of a dermatitis, which has been accurately described by Dr. Prosser White.[1]

The woman whose case is here recorded was aged 24, and was strong, well-developed, and muscular. She had been engaged in munition work for a period of six months, and four months before her fatal illness became an examiner in a munition factory. Her especial duty lay in examining the bags which were filled with the yellow powder, and this involved moving in an atmosphere filled with the dust, "enough," she said, "to make one sneeze." She also complained of the bitter taste which was always present in the mouth, and that all the food which she ate tasted of it. She wore a plate in the upper jaw, and, though she washed this regularly after her meals, she did not do so before eating. One month before her illness she noticed that she was passing dark-coloured urine, but it was not till a fortnight later that she began to feel ill, with loss of appetite and headache. She also had some vomiting after food with much retching. Four days later she felt worse and noticed that she was slightly yellow. This condition persisted, although she was sent to bed, and ten days later she was admitted to St. Bartholomew's Hospital.

She was deeply jaundiced, and the urine was stained almost black with bile pigments. There were one or two small petechiae on the body, but these were faded and did not appear to be of recent origin. The liver dullness began at the fifth rib, the organ could be felt just below the margin of the ribs, and there appeared to be some tenderness in the region of the gall bladder. The spleen could not be felt, nor on percussion did it seem to be enlarged. Her temperature was normal, and, apart from the jaundice and the vomiting, she did not appear to be ill.

On October 4th she was quite free from headache and nausea, but on October 6th she became very drowsy and vomited everything which she took. On October 7th she became very restless, and in the evening delirious, shouting and moaning. On the morning of October 8th she was quite unconscious and wildly delirious, and gradually sank and died in the evening.

At the *post-mortem* examination the chief features were

the exceeding abundance of haemorrhages in the omentum and on the surface of the peritoneum, which were splashed all over with bright red maculae; these were abundant also in the mesentery, especially close to its attachment to the gut. There were a few petechial haemorrhages in the pericardium, especially round the origin of the great vessels, and a few in both the visceral and parietal pleurae. The liver weighed only 29 oz.; it was dark red in colour, mottled with splotches of a yellowish tint, which were slightly raised above the surrounding tissue. Microscopical examination showed that these were patches of degenerating liver cells, and that the darker tissue was composed of connective tissue fibres, débris, and inflammatory cells. The bile ducts were patent and the gall bladder natural. The kidneys were soft and dark in colour, with a slightly yellow tinge; under the microscope they showed an abundance of fatty degeneration.

There were no cerebral or meningeal haemorrhages.

The history and the course of the illness are those of an acute toxaemic jaundice, non-obstructive in character, for her motions contained plenty of bile pigments. In view of the fact that T.N.T. frequently causes anaemia, it is of interest to record that she did not appear to be anaemic, and that her red blood corpuscles numbered 5,000,000 per c.mm. and the haemoglobin was 90 per cent. It is also of interest, in view of the profuse omental and mesenteric haemorrhages, to record that her red blood corpuscles showed an abnormal resistance to solutions of sodium chloride, unlike the abnormal fragility in many cases of haemolytic jaundice. In fact, in this respect her corpuscles behaved just as do those of patients who are the subjects of ordinary obstructive jaundice. Clinically, the most striking feature of the case was the suddenness of the onset of the fatal symptoms; less than two days before her death she seemed to be in good condition, without any serious symptoms pointing to a grave prognosis. Yet it is obvious from the condition of her liver at the time of the *post-mortem* examination that the toxaemia had already robbed her of any chance of survival.

REFERENCE.
[1] *Lancet*, February 19th, 1916.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

HEXAMINE IN ACUTE ANTERIOR POLIOMYELITIS.

IN the JOURNAL of September 30th Dr. Douglas Guthrie records two cases of meningitis in which hexamine was given. He comes to the conclusion that the administration of the drug by the mouth is useless. The following sporadic case of poliomyelitis is interesting with regard to this point.

A. B., aged 11, went to bed quite well on the night of July 8th, 1914. Next morning he complained of much difficulty in walking and slight pain in the legs. I saw him about midday; he was then acutely ill, with a temperature of 104°. There was marked weakness of both legs but no affection of the joints. Hexamine, in 10-grain doses every four hours, was prescribed. On July 10th the temperature was lower but the paralysis was more marked, the patient being quite unable to move the left and only very slightly the right leg. When seen on July 11th there was a distinct improvement in the paralysis and the temperature was normal, but in the evening, after 150 grains in all of hexamine had been given, haematuria with considerable strangury occurred. The hexamine was stopped and an alkaline mixture given. By July 14th the paralysis had completely cleared but the renal symptoms continued, finally disappearing in about another week.

Here, I think, there is an example of hexamine being of value, particularly if it be remembered that complete recovery in sporadic cases is extremely rare.

N. FOX EDWARDS, M.B., Ch.B.Vict.
Broseley, Shropshire.

A SIMPLE ASEPTIC WAY OF PERFORMING VACCINATION.

IT is common to see patients suffering from a so-called "bad arm" after vaccination. The various degrees of inflammation, from a mildly septic arm to those serious cases, fortunately rare, of septic poisoning, are so well known that a description is unnecessary.

The following is a simple method that I have employed with good results on recruits:

1. The patient's arm is first thoroughly rubbed by an orderly with methylated spirit to disinfect the skin.
2. A tube of calf lymph is taken and one end broken off; the broken end is held for a moment in the flame to sterilize it, as it may touch the patient's skin during the operation. A lighted match is then applied to the other end of the tube of lymph, which always contains an air bubble. The heat of this causes the air to expand, and, if held over the patient's arm, it blows the lymph on to the arm.
3. A needle is taken with a point that has been slightly blunted, and held for a moment in the spirit flame to sterilize it. The lymph is spread from the drop on the patient's arm with the sterile needle to as many points as it is desired to vaccinate, usually four. The skin is then scratched by the needle sufficiently to draw a little of the patient's lymph but not sufficiently to draw blood.
4. A pad of sterile white gauze is immediately and firmly strapped on in the following way:—A towel wrung out in 1 in 40 carbolic is spread out on a table, and on it is a roll of sterile gauze ten yards long. A piece of gauze is cut off and folded twice or three times, and applied to the patient's arm in such a way that the inside of the gauze comes next his skin, and no part which has been touched by the operator's fingers lies near the vaccination wounds. Then a strip of 1 in. self-adhesive plaster is wound round and round the arm over the dressing to keep it secure.
5. The patient is told on no account to let the dressing get loose, and to have it dressed immediately should it show signs of slipping. He is ordered light work not necessitating using his arm, and he is directed to come up in five days. The second and any subsequent dressings are of boric lint.

The results were as follows: Of the first eighty-five patients eighty-one took; no really bad arms were observed; four slightly inflamed arms became normal after one or two boric fomentations. It appeared that the gauze had been used rather too sparingly, and the strapping had in some cases only been put on in strips instead of being wound round the arm, and in some cases the dressings had got loose.

In the next batch there were forty-five men. In these rather more gauze was used as a dressing, and the strapping was carefully wound round and round the arm over the gauze; out of these, forty-four took. Not a single case needed a boracic fomentation.

This method sounds rather laborious, but with a little method it is not so. The 180 men took 231 minutes to vaccinate, or well under two minutes each. Each roll of gauze ten yards long sufficed for from twenty-five to thirty men, so that the expense was not great.

The conclusions drawn are that every bad arm following vaccination is really a septic arm, that these simple aseptic precautions are effective, and that they do not prevent the arm taking properly.

ECHLIN S. MOLYNEUX,
Bournemouth. Lieut. R.A.M.C.

Reports of Societies.

SANITATION OF CAMPS.

AT a meeting of the Section of Epidemiology and State Medicine of the Royal Society of Medicine on October 27th, Lieutenant-Colonel Sir SHIRLEY F. MURPHY, R.A.M.C., in the chair, Captain C. G. MOOR, City of London Sanitary Company, R.A.M.C.T., read a paper on army sanitation at a base camp. After describing the organization of a sanitary section, Captain Moor dwelt upon certain aspects of sanitary work at a base. In the case of water supplies he advocated double sterilization, the source of supply being treated, in co-operation with the civil authorities, and the water bottles of the men being also systematically dealt with. In the disposal of manure he had found that the most satisfactory plan was to construct a narrow gauge tram line to the yard, a convenient gauge being 18 in., and the weight of rails 12 lb. to 18 lb. Sleepers should be placed not more than 2 ft. apart, and properly packed. By this method manure could easily be removed to a distance of a mile or a mile and a half from the camp. When, as often happened, it was necessary to burn the manure, this was best carried out by means of a cross trench incinerator. A good method of keeping down flies from collections of manure accumulated under conditions rendering either burning or close packing impracticable

was to run fowls on the dumps, as they devoured large numbers of larvae. It was necessary, in order to keep flies from latrines, to provide a close-fitting lid to the buckets, and also to ensure by instruction and inspection that the lids were replaced immediately after use. Fly wires made from the wires of hay bales and smeared with a mixture of two parts by weight of powdered resin and one part of castor oil (melted in a saucepan and applied hot) were very efficacious.

At the conclusion of Captain Moor's paper Major H. S. Fremlin, officer commanding the City of London Sanitary Company, exhibited a large collection of diagrams illustrating the various devices employed by the sanitary sections in the field. In the subsequent discussion Lieutenant-Colonel Copeman, F.R.S., emphasized the value of the method of close packing manure as a means of stifling the fly pest at its source, and also referred to the excellent results achieved by the chemical treatment of sullage water. Mr. Bacot, entomologist to the Lister Institute, called attention to the danger of applying results obtained with fly sprays at ordinary temperatures to tropical or subtropical conditions. Lieutenant-Colonel Kenwood hoped that many of the simple and effective devices invented under the stress of war conditions would be utilized in civil public health work in rural districts. Captain Hartley gave an interesting account of his experience with a sanitary section at the front and called attention to the danger of allowing wastage in the sanitary ranks to be replaced by untrained men.

THE VALUE OF HYPOCHLORITE SOLUTIONS FOR THE TREATMENT OF WOUNDS.

At a meeting of the Surgical Section of the Royal Society of Medicine held on October 31st, Colonel Charters J. Symonds, Vice-President, being in the chair, Dr. Sherman (Pittsburg, U.S.A.) read a paper on the method followed by Carrel for the sterilization of wounds. The antiseptic employed was Dakin's solution, prepared according to a formula suggested by Daufresne.

With chloride of lime (bleaching powder) having 25 per cent. of active chlorine, the quantities of necessary substances to prepare 10 litres of solution were: Chloride of lime, 200 grams: sodium carbonate (dry), 100 grams; sodium bicarbonate, 80 grams The chloride of lime was put into a 12 litre flask with 5 litres of ordinary water, shaken vigorously for a few minutes, and left in contact for from six to twelve hours. At the same time the carbonate and bicarbonate of soda were dissolved in another 5 litres of water. The salt solution was then poured into the flask containing the chloride of lime, and the mixture being well shaken was allowed to stand so that the calcium carbonate might fall. After about half an hour the liquid was siphoned off and filtered through a double paper to render it clear. It should then be kept in a dark place.

In the treatment of wounds the solution was led to them from a glass container by means of several rubber tubes in which holes were cut at frequent intervals. These were insinuated into the wounds, or laid upon them in such a way that every part of their surfaces and recesses was irrigated. Gauze lightly adjusted around the tubes assisted in retaining them in position and in bringing the whole area into contact with the solution. The wounds were flushed intermittently. With this method even serious and deep wounds soon became free from pus and covered by healthy granulations, and before many days could be sutured or brought into apposition by strips of plaster, union then occurring rapidly. The degree of infection of the wound was determined regularly by smears in each case, and by this means the rapid decline in numbers of the bacteria could be noted and the time when suturing was permissible determined. His contention was supported by photographs, radiograms, and lantern slides.

Sir W. Watson Cheyne said that the illustrations depicted results such as had not been obtained before. The paper coincided with his view that the only likely way to obtain good results was by the use of antiseptics. A great difficulty in the universal application of the method was the impossibility of keeping patients continuously under the care of the same doctor.

Mr. Jocelyn Swan held that the mechanical effect of the treatment was largely responsible for its success. He thought that the best results followed a combination of the treatments by hypochlorite solution and hypertonic salt solution used alternately. His experience was that the progress of wounds which arrived in England after having been sewn up in France was unsatisfactory. Not infrequently they had to be reopened. Much had still to be learnt of the method of application and action of each antiseptic used. An important point was that after this form of treatment fractures could be plated. He thought that it was safe to plate after the wounds had been freely opened and drained and subjected to hypochlorous acid.

Colonel Charters Symonds took the view that the method advocated was not new but had been well established for some time. He thought that better results could be obtained by hypochlorite solution than by using pure saline. When wounds were superficial they could be easily sterilized. He hesitated to ascribe all the benefit to the hypochlorite solution. Many other antiseptics would accomplish the same thing—for example, permanganate and mercury perchloride, but the hypochlorite method might be quicker. He thought that full credit should be given to it for the improvement which had been depicted in cases of compound fracture. The results were better than those obtained in other ways at the base in such cases. Much depended upon the enthusiasm and ingenuity of the man who was treating the patients. He was satisfied that intermittent was better than continuous application of antiseptics, but had found it more satisfactory to vary the antiseptic than to keep to one solution.

Dr. Sherman, in reply, contended that the method should be regarded as new, and laid stress on the particular virtue of the antiseptic employed—Dakin's solution.

Reviews.

SIR HENRY ROSCOE.

When a leading man of science has completed his life-work and passed away, a review of his work by a competent hand is always interesting and profitable, and it is now a usual practice among scientific bodies for a memorial lecture, dealing with the work of a lately deceased scientist, to be delivered by a worker in the same field. Owing to the high degree of specialization which prevails in so many departments of scientific work, and certainly not least in the province of chemistry, any such review is often fairly complete while including very little of a biographical nature. This, however, is not the case with the subject of the memoir here reviewed, and Sir Edward Thorpe has done well in expanding to a biographical sketch,[1] now published as a volume, the obituary notice on Sir Henry Roscoe which he prepared at the request of the councils of the Royal and Chemical Societies. Roscoe's published papers, recording original work, were numerous, but he was no specialist; at the time of his greatest activity organic chemistry, with its many branches of purely specialized work, was only beginning to enter on its present vast development, but in any circumstances or at any time Roscoe's breadth of view and well balanced nature would have prevented his becoming a mere specialist. He was essentially a teacher, and by his direct teaching and the indirect teaching of his books had an influence on the development of chemistry in Greater Britain which it would be hard to exaggerate.

Sir Edward Thorpe commences his biographical sketch with a brief outline of the careers of Roscoe's grandfather and father, which show that his abilities were no sporadic outcrop, but such as were to be expected from his heredity. It was fortunate that as a boy he was sent to a school in which elementary science was taught and which was furnished with a laboratory—a more exceptional case in 1842 than now—and he was provided with a room at home in which to carry out experiments. On leaving school he entered University College, London, and learnt chemistry under Graham and Williamson; having graduated with honours in chemistry he went to Heidelberg and worked with Bunsen, with whom he formed a life-long friendship, and whose influence was undoubtedly strong in shaping his career as a university professor. The Germany of

[1] *The Right Honourable Sir Henry Enfield Roscoe, P.C., D.C.L., F.R.S.* A biographical sketch. By Sir Edward Thorpe, C.B., F.R.S. London: Longmans, Green and Co. 1916. (Demy 8vo, pp. 216. 7s. 6d. net.)

those days—the eighteen-fifties—was very different from the Germany of to-day, and Roscoe says:

As to any feeling antagonistic to England and the English existing in the minds of the many Germans with whom I became intimate, I never found a trace, for Treitschke I did not know. All with whom I ever came in contact expressed a feeling that England was the old home of freedom, that she had led the van in securing that freedom by gradual and peaceable measures, and, in short, that the path in which the Englishman trod was that in which they wished to follow.

Soon after his return to England Roscoe succeeded Frankland as professor of chemistry in the newly-founded Owens College, Manchester, and held the appointment for the next twenty-eight years, during which time the struggling college developed into a great and important university. His influence on its development was profound; at the time when he took up his duties the students numbered only thirty-five, of whom fifteen were working in the chemical department; when he resigned his professorship in 1885 on being elected to Parliament, the Victoria University, as the college had become, contained one of the leading schools of chemistry in the country, over 2,000 men had passed through the courses of chemical instruction there, and 235 original communications had emanated from its laboratories; no similar place in the kingdom could show such a record of contributions to chemical knowledge. The development of Owens College and Yorkshire College, Leeds (now Leeds University), is outlined in some interesting chapters by Sir Edward Thorpe, who himself played a considerable part in it. Roscoe's share in the work was by no means confined to the able and efficient discharge of his duties as teacher; he was one of the leading spirits in the government and development of his college.

As an author of textbooks of chemistry, Roscoe had a far wider circle of pupils than those who came under his personal tuition; his *Lessons in Elementary Chemistry* (1866) and *Chemistry Primer* (1870) went through a long succession of editions and were translated into nearly a dozen foreign languages; probably through the medium of these and subsequent larger works from the same hand a greater number of existing chemists in Britain owe part of their education to Roscoe than to any other one man.

It is impossible in a short notice like the present even to enumerate the many other capacities in which he rendered admirable service to the cause of education and science; as a member of Parliament his sound scientific and practical knowledge made him a most useful member of numerous committees and Royal Commissions; he was president of the Chemical Society, vice-president of the Royal Society, vice-chancellor of London University, a member of the governing body of Eton College, and in numerous other capacities played a leading part in the educational and scientific life of the country. Medicine is directly indebted to him for the important part he took in founding the Institute of Preventive Medicine, now the Lister Institute, of which he was treasurer for twenty-one years. Many of his activities are touched on in this biographical sketch, but the full record of them would be quite impossible in any moderate sized volume. In an interesting chapter an article is reproduced which he contributed not long before his death to the German review, *Nord und Sud*, on "Germany and England." It expresses clearly and forcibly the views of one who writes, as he says, "neither from the point of view of a diplomatist nor of a politician, but simply as a scientific man who, being a *Menschenfreund* and *Deutsch-gesinnt*, and anxious to see differences between the nations as between individuals disappear, asks himself the questions, Who are the people who are stirring up all this discord? What do they mean? What do they want? What is their power?" This is followed by extracts from an article by a German writer which followed it, in which is set forth a saner view of what should be the relations between the two countries than that which unfortunately gained the ascendancy with the rulers of Germany.

Sir Edward Thorpe is in error on one small matter. He says:

Roscoe now (about 1850) elected to follow chemistry as a career, somewhat to the dismay of his relatives, who, he tells us, imagined he intended "to open a shop with red and blue glass bottles in the window," such being the external indications of the calling of a chemist in this country. And no wonder they were perturbed, for any one not being registered as a pharmaceutical chemist or as a chemist and druggist who should presume to style himself a chemist was punishable with a fine. Liebig was not altogether well informed of the facts when he wrote to Berzelius that the English chemists were ashamed to call themselves such because the apothecaries had appropriated the name. It was not so much that they were ashamed, as they were actually prohibited by law. Although nearly two generations have passed since those days, it may be doubted whether even now the public mind has quite grasped the distinction between a chemist properly so-called and an apothecary.

But the facts are that the first restriction in title was by the Act of 1852, which only restricted the titles "pharmaceutical chemist" and "pharmacist," and it was not till 1868 that the titles "chemist" and "chemist and druggist" were restricted. Probably if there had been more chemists, in Roscoe's sense, in Great Britain in 1850, the public would have distinguished clearly enough between chemists and pharmacists, and the title chemist would never have been legally restricted to the latter.

BACILLARY DYSENTERY.

The Bacteriology of Dysentery in Malaya is the title of No. 13 of the Studies from the Institute for Medical Research, Federated Malay States.[2] In this report Dr. FRASER, Director of the Institute of Medical Research, deals with the variety of organisms producing bacillary dysentery. It is interesting to record that from no case of amoebic dysentery in the series was a strain of the dysentery bacillus cultivated. Of non amoebic cases 67 were studied. In 41 no dysentery bacilli were obtained; failure in some of these cases possibly depended upon defects in technique. In the other 26 cases different types of dysentery bacilli were found, from only 2 cases was the *Bacillus dysenteriae* (Shiga) isolated, while in the remaining 24 mannite-fermenting strains of dysentery bacilli were cultivated. The details of these are given in the paper. The chief conclusions drawn from the inquiry are that the mannite-fermenting bacilli were not separable into varieties or types, and that as the reactions of the mannite-fermenters on maltose, saccharose, and dextrin are subject to great variations the results should not be used either for classification or for the creation of types. Dr. Fraser considers that the dysentery bacillus of Flexner, the bacillus "Y" of Hiss and Russell, and Strong's bacillus are not distinct types, and suggests that these names should be abolished, as their retention can only perpetuate confusion. As an alternative, the name "mannite-fermenting dysentery bacilli" is suggested. Comparisons by means of sugar reactions of freshly isolated strains of mannite-fermenting dysentery bacilli with those isolated for some time, or with those isolated by other workers, are condemned as unsound. Finally, as the disease associated with mannite-fermenters does not differ from the disease associated with the *B. dysenteriae* (Shiga), the term "pseudo dysentery" should, he considers, be abolished. The paper shows evidence of careful and accurate work, and is worthy of study by bacteriologists interested in the subject.

NOTES ON BOOKS.

DR. HENRY O. MARCY contributes to the *Transactions of the Southern Surgical Association*[3] for 1915 a memoir entitled The Surgical Service of the Civil War Then and Now, relating the progress effected in fifty years, which will interest our readers for the same reason that two other papers and an instructive discussion (begun by Dr. T. S. Cullen, of Baltimore) on military surgery will claim their attention. Dr. Marcy relates two amusing anecdotes of Surgeon-General Gorgas, whose name is associated with the discovery of the part played by *Stegomyia fasciata* in the etiology of yellow fever. The first is that, when engaged in his studies on that disease, he was summoned one night in great haste by a practical joker to attend to a case of serious fracture of the shoulder-joint. On promptly responding to the call he found that the "patient" was one

[2] *The Bacteriology of Dysentery in Malaya.* By H. Fraser, M.D.Aberd. Studies from the Institute for Medical Research, Federated Malay States. No. 13. Singapore: Kelly and Welsh, Ltd. 1916. (Demy 8vo, pp. 44. 3s. 6d.)

[3] *Transactions of the Southern Surgical and Gynecological Association.* Vol. xxvii. Twenty-seventh Session held at Ashville, North Carolina, December 15th, 16th, and 17th, 1914. Edited by W. D. Haggard, M.D. Nashville, Tenn.: Published by the Association, 1915. (Med. 8vo, pp. 674; illustrated.)

of his mosquitos with a broken wing. The other is of the commission appointed from Washington to report on the value of his laboratory studies. Just as the commission was imparting to Gorgas its conclusion that his deductions were sheer nonsense, an assistant entered and said to him, "Colonel, the infected mosquitos in one of your cases have broken loose"; the members of the commission immediately departed in such frantic haste that they actually took the side of the tent with them.

The Michigan Agricultural College has recently issued a *Laboratory Manual of General Microbiology*,[4] that aims at familiarizing the student with the general outlines of bacteriological work. It is to serve as an introduction to the subject; its authors do not wish to compete with books already in existence devoted to the special bacteriology of the dairy, the soil, water supplies, or medicine. It is divided into three parts. The first deals with general morphological and cultural methods, detailed in a series of fifty-three lessons. Moulds, yeasts, and bacteria are taken up in the order of their comparative sizes, and studied from the points of view of morphology and culture. The second part, containing thirty-three lessons, covers the ground of the physiology of microbes. The third part has to do with the applied microbiology of the air, water, sewage, the soil, the dairy, the diseases of plants, and animal diseases and immunity; it contains forty exercises. The book is well arranged, clearly written, and contains a number of excellent illustrations; plenty of references are given to the literature, and more particularly to standard European textbooks. The book is one for use in the laboratory; the various authors responsible for its production are to be congratulated upon the skill and success with which they have done their work.

A note on the anatomy of imperfectly descended testes by Dr. A. C. Wood of Philadelphia, a report by Dr. Gardner, of Buffalo, on priapism associated with chronic lymphatic leukaemia, and a decided active discussion on a monograph by Dr. Douglas Bissell on the surgical treatment of the tuberculous ureter in the female, are among the chief features of interest in the new volume of the *Transactions of the American Association of Genito-Urinary Surgeons*,[5] which also contains some good photogravures of renal and prostatic diseases.

[4] *Laboratory Manual of General Microbiology.* Prepared by the Laboratory of Bact-riology, Hygiene, and Pathology, Michigan Agricultural College. First edition. New York: J. Wiley and Sons, Inc. London: Chapman and Hall. 1916. (Post 8vo, pp. 434; 73 figures. 10s. 6d. net.)

[5] *Transactions of the American Association of Genito-Urinary Surgeons.* Twenty-ninth Annual Meeting, White Sulphur Springs, May 18th-20th, 1915, and a combined meeting of the Association with the American Gynaecological Society. Vol. X. New York: F. H. Hitchcock. 1915. (Med. 8vo, pp. 351; 18 plates.)

MEDICINAL AND DIETETIC PREPARATIONS.

Emetine Bismuthous Iodide.

THE value of this salt is referred to in Mr. Clifford Dobell's paper published at p. 612, and also in an article on p. 626. The compound used in the first investigations of its clinical value in this country was, we understand, prepared by Messrs. Burroughs, Wellcome and Company. It is now supplied by that firm as tabloid emetine bismuthous iodide grain 1, keratin-coated. It is also supplied by the firm of W. Martindale, either in powder or in stearettes, so called because coated with a material containing stearic acid.

THE TYPHUS EPIDEMIC AT GARDELEGEN.

REPORT BY THE GOVERNMENT COMMITTEE.

A WHITE PAPER recently issued contains a report on the typhus epidemic at Gardelegen by the Government Committee on the Treatment by the Enemy of British Prisoners during the spring and summer of 1915. The Committee, the chairman of which is Mr. Justice Younger, have now obtained from Major P. C. T. Davy, Captain A. J. Brown, and Captain Scott-Williams, R.A.M.C., detailed accounts of their experiences in the camp. The facts appear to the Committee, with their painful experience of German methods, to be typical of much that may under similar conditions be expected to recur "unless those in authority are constrained by the pressure of neutral condemnation, if for no more worthy reason, to make it certain that they shall not."

Major Davy says the overcrowding, when the epidemic broke out, was such as he had never imagined anywhere. Men of all nationalities lived, slept, and fed in huts without tables or stools. They walked over each other in passing in and out; they lay there sick, and in many cases died there cheek by jowl with their fellow prisoners. The atmosphere by day, and still more by night, was indescribably fetid. The prisoners had to subsist on the food supplied by the camp administration, which was bad in quality and insufficient to keep an adult in a normal state of nutrition. From the beginning of April, 1915, the British, and still more the French, lived to an ever-increasing extent on what they received from home. The Russians received hardly any parcels, and Captain Brown says it was no unusual sight to see a crowd of them on their hands and knees in the pit in which potato peelings were thrown, struggling to find a stray potato or a piece of rind with a little more potato than usual. The vast majority of the British had their overcoats taken from them when they were made prisoners, and they were never returned. Yet there was a quantity of khaki service kit in the camp store, which the commandant first neglected and finally refused to distribute. The provision for heating the barracks was totally inadequate. The sanitary conditions were deplorable. The task of emptying the latrines into tubular tank carts was especially allotted to the British till sickness had so much reduced their number that a fatigue party of sufficient strength in one company could not be obtained. Many men had been three months in the camp without having been able to get a bath. The result was that by the end of February, 1915, "lice swarmed in every garment the men wore, and in every blanket they slept in." During this period the prisoners were treated by their guards with the utmost harshness. At the daily roll-call men were driven out of their barrack-rooms with kicks and blows.

By the beginning of February the authorities, becoming afraid of an epidemic, brought from their places of internment elsewhere a body of British, French, and Russian medical officers. On the morning after their arrival they were told by the commandant, Colonel Brunner, that if they did their work without complaining they would be well treated, otherwise they would be punished. He then left Dr. Wenzil, who had been in medical charge of the camp, to assign to the officers their respective duties. Under him was a staff of German nursing orderlies, and assisting him was a third or fourth year medical student named Boas. The hospital contained 200 beds, although there was not proper space for more than 90. Dr. Wenzil explained that it was merely a detention hospital for light cases, severe cases being transferred to the town hospital. This, he said, accounted for the very meagre supply of drugs and dressings, which comprised "a very small amount of the common drugs, such as 4 oz. of Epsom salts and three to four dozen tablets each of quinine, aspirin, and calomel. There were also a dozen or so of bandages, an armful of gauze and lint dressings, and a very small case of surgical instruments." Soon the sick rate rose rapidly, and the hospital overflowed. Some barracks were emptied of prisoners and used as an annexe.

The cases up to this time were mostly mild and atypical, and their nature, although suspected by the British medical officers, was not clearly established. Very soon, however, a commission of German doctors arrived, amongst them a professor from Magdeburg. After a visit of less than an hour the commission left the camp. Within half an hour of their departure there was a stir amongst the German guards. They were packing up and preparing apparently for a hasty retreat. In two hours there was not a German inside the camp. Herr Boas, whom Major Davy was to meet and go over some cases with, was absent; he was never seen again. Every German hospital orderly had gone; the sick were left quite unattended. In the hospital there remained only a few British, French, and Russian prisoners employed on fatigue duty. The prison kitchens were empty, the German women formerly employed there having departed.

Before leaving, the sentries had unlocked the gates between companies, and the whole prison population roamed freely about the camp, and the result was that the epidemic became general. In the afternoon the British, French, and Russian doctors were summoned to the outer barbed wire, where the commandant told them that the camp was in quarantine, that a sanitary cordon had been drawn round it, and that the sentries had orders to shoot any one attempting to leave. Colonel Brunner is described as a man of extremely violent temper, always brutal to the captives, whom, whatever their nationality, he treated not as prisoners of war, but as men who had deserved and

were to receive rigorous punishment. In the annexe the state of things was appalling.

The sick had to be dumped down anywhere, for there was not at first a sufficient number of attendants to cope with the work. There were no beds for them; they had to lie on their shaving-filled bags. There were no bedpans or urine bottles, and the state of the patients and the floors was indescribable. There were no feeding-mugs or even small cups or bowls—nothing but the large bowl which formed part of each man's equipment. No milk, or eggs, or other invalid fare was forthcoming. It was ordained that the sick were to continue on exactly the same rations as they had been receiving—the same soup, the same black bread, the same weekly raw herring for each—a diet "tragically grotesque," says Major Davy, "for a man in the middle of an acute illness."

The doctors grappled vigorously with the situation. The number of British in the camp was relatively small, so that the sick among them formed only a small part of the British officers' care. They shared with the French doctors the care of the French and Belgian sick. It is not possible, says the report, to acquit Dr. Wenzil of responsibility for neglect of the most elementary sanitary precautions, for the unsuitable and insufficient diet provided for the patients, and for omission to supply in anything like sufficient quantity the barest medical and surgical necessities. He himself sickened shortly after the quarantine had been declared, and died of typhus in the town. Three or four days after the isolation of the camp a new medical officer appeared, but he never came inside. The doctors asked for milk and eggs for the sick, for a more plentiful supply of drugs, and for gowns and rubber gloves for themselves and the orderlies. No thing came of the requests. The new German medical officer remained only a few days, and was succeeded by a third, who came fairly often to the camp, but never entered it. He was, however, more responsive than his predecessors. Two weeks elapsed, however, before any gowns or rubber gloves were issued, and then only for a few of the doctors. To that neglect, says the report, was doubtless attributable the infection caught by so large a number of the medical officers and orderlies, and the deaths of so many of them. No milk was supplied by the German authorities, but it was procured from the town by a friendly under-officer, who received a small commission, and it was paid for by the medical officers themselves. As the result of their exertions the bare necessities were obtained from home.

Towards the end of March Dr. Kranski arrived. He devoted himself to improving the sanitation, leaving the treatment of the sick in the hands of the other officers. But he was in the hands of the commandant and could not do all that it is certain he would have wished to do. Owing to the want of dressings, an enormous number of extremely bad sores, several cases of gangrene, many large ulcers, and every form of extensive suppuration had supervened. Major Davy and Captain Brown never ceased to ask Dr. Kranski for a further supply, but he could not get it, the refusal being based on the pretext that there was not a sufficiency to be obtained in Germany.

The Committee think it impossible to find any justification or palliation for the conduct of the German administration in this matter. The epidemic lasted about four months; before it came to an end over 2,000 cases were dealt with out of about 11,000 prisoners. The mortality was approximately 15 per cent. of those attacked. The type of disease was milder than in other German camps. By the end of June the typhus had died out and the camp was looking forward with misgivings to the return of the Germans. It seems to the Committee to be one of the most painful incidents in a dismal record that the deliberate abandonment of helpless men to their fate when danger threatened was to the prisoners themselves a positive relief.

We have more than once hinted that neutral visitors to prison camps are sometimes hoodwinked by the Germans. An edifying example is given in the report. In the course of a conversation about food Dr. Ohnesorg, of the American Embassy, said he had seen several carcasses of mutton outside a kitchen. Captain Brown, who had never seen mutton in the camp, inquired into the matter, and found that the meat had been taken away after it had served its purpose of deceiving Dr. Ohnesorg, whose visit had been expected.

Of the sixteen doctors in the camp, twelve contracted the fever and two died. The work of Major Davy, Captain Brown, and Captain Scott-Williams is spoken of in the highest terms, and these officers speak with enthusiasm of the devotion of Dr. Saint-Hilaire and their other French colleagues. Twenty-two of the orderlies were British; twenty of them caught the disease, and two died.

In conclusion, the Committee point to the startling parallel between the occurrences at Gardelegen and those at Wittenberg. They say that many similar features are to be found in the administration of the camp at Langensalza.[1] As a contrast, they refer to the Göttingen camp, where the administration was more enlightened and humane. That, however, was a bright exception. A note is appended to the report to the effect that it is understood that there have been no British prisoners at Gardelegen for some time past.

COMMENTS ON DR. ZUM BUSCH'S ACCOUNT OF "THE BRITISH TREATMENT OF INTERNED CIVILIAN ALIENS."

BY

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THE majority of the attacks made by German writers on British treatment of interned civilians bear so plainly on themselves the evidence of falsity that it is unnecessary even to contradict them; but when a writer enters the lists whom it has been our habit to regard as a scientific man, whom the *Koelnische Zeitung* lauds as "a trustworthy personality" whose *ipse dixit* "is surety for the literal truth of the facts he relates," and declares that from the facts one must realize that "German civilians interned in England are in exactly the same case as the English civilians interned at Ruhleben," one must needs examine the evidence on which he bases this conclusion. On examination it will be found that this evidence is mostly hearsay, and Dr. zum Busch, in his article in the *Deutsche medizinische Wochenschrift* of July 27th, has apparently been so eager to get at statements of ill-treatment that he has accepted any story without examination. Nay, more; when facts were wanting and statements failed, he has not hesitated to invent facts and to ginger up statements to suit the palate of his audience.

The space at my disposal is too limited to go into each and every one of Dr. zum Busch's assertions, but one or two of them placed side by side with the results of my investigations cannot fail to convince any impartial reader of the actual facts. His article comprises a general stricture of our medical treatment of interned civilians, a particular censure of our arrangements, both medical and general as well, at the Stratford camp, where he himself was interned, and a lively tirade against the attitude both of the British public and of the American Embassy towards the interned civilians and their sufferings. With reference to the last of these points the writer can only say that he himself has seen a good deal of the work of the American Embassy; that it seems to him to be most thorough and painstaking, and to show a deep concern for all the complaints of prisoners; and that the patience of the British public is wonderful when one sees the truculent and insulting demeanour of gangs of German interned civilians towards their guards and even to the ordinary passers-by when they are working on the roads. As to Stratford, Dr. zum Busch commences by telling us that the interned civilians' "living room was a former jute factory which had been shut up for several years owing to its unhygienic condition," while the owners of the factory (Messrs. Ritchie and Son) inform us that they gave up the manufacture of jute in Stratford because they found they could do it more profitably elsewhere, and that in their opinion the sanitation of the site was most satisfactory. "The floor of the sleeping room," Dr. zum Busch says, "is of stone flags, and here at every rainstorm (and how many such are there in London?) great puddles of water are collected." As a matter of personal observation I can vouch that there is not a stone flag anywhere in the floor of the sleeping room. It is of concrete and wood in alternate strips each about 6 ft. broad, so that Dr. zum

[1] For particulars as to the epidemic in this camp see BRITISH MEDICAL JOURNAL, March 18th, 1916, p. 421, where a summary of Dr. Leonetti's account is given.

Busch's account of the great puddles of water which are collected between the stone flags must be entirely imaginative. The feeding of the interned civilians is strictly in accordance with the War Office scale, which provides:

Bread 1½ lb., meat 8 oz., tea ½ oz. or coffee 1 oz., salt ½ oz., sugar 2 oz., pepper $\frac{1}{7\frac{1}{2}}$ oz., milk (condensed) $\frac{1}{2\frac{1}{6}}$ tin (1 lb.), vegetables (fresh) 8 oz., margarine 1 oz., peas, beans, or oatmeal 2 oz., fish (salt) ¾ lb. (an adequate dietary). The cooking is done by some of the interned civilians who have been chefs or cooks in first class hotels or on board passenger ships, and the meals which I have seen at the many surprise visits I have paid to the Stratford camp have all been sufficient, well cooked, and appetizingly served. I have inspected the meat and fish before they were cooked both at Stratford and at other camps, and can certify that they are both of excellent quality and quite as good as, if not better than, the ration meat which is served to our troops in the field. Zum Busch's statements about "poor quality tasteless white bread, small pieces of frozen meat, and insufficient vegetable rations" are nothing more or less than mischievous lies. Such also must be the case with his "reign of terror" established by Colonel Lambert, the former camp commandant, with "his continual punishments by imprisonment with bread and water," as we find that only fifty such punishments have been inflicted since the commencement of the camp to the present time, a period of twenty-three months, during which the average daily population of the Stratford place of detention has been just under 400, and that the majority of these cases were given only twenty-four hours' detention on bread and water. Dr. zum Busch's culminating tale of the horrors of our English internment camp at Stratford is, however, that of the 16-year-old ship's boy "who had been arrested in the Suez Canal, and kept in Malta in the company of many Arabs, who had misused him and infected him with syphilis," but the sting is taken out of the story when we learn, as I did, from the boy himself, in the presence of unprejudiced witnesses, that the men who infected him were not Arabs, but elderly Germans, who were with him in a tent in Malta. Zum Busch's complaint, too, that the boy was "absolutely without treatment at Stratford for ten weeks, and that, through the neglect of ordinary precautions by the Stratford medical authorities, the remainder of the prisoners were placed in danger of infection," is rather discounted when we find from the Stratford hospital books, which are kept consecutively and so cannot be falsified, that the boy was admitted to hospital the day after his arrival at Stratford, that long before Dr. zum Busch arrived there he was undergoing both general and local treatment, and that special directions were issued shortly after his admission to hospital with regard to his segregation from the other prisoners of war in eating, sleeping, and washing.

At this point, not for want of material but for lack of space, I must leave the Stratford camp and go to Dr. zum Busch's general tirade against our methods and their results. Here zum Busch's statements are even wilder and more wanting in a foundation of fact. Thus he says that the death-rate in the camps is low because all the bad cases are "often unluckily too late shoved into hospitals where so many of them have laid down their lives." The total number of deaths, however, among the interned civilians in Great Britain, including the deaths in hospitals and even those which occurred in transit to the place of embarkation, have been 200 only, which out of 37,000, the total number of aliens who have been interned, works out to the very satisfactory figure of 5.40 per mille; while his allegations that a great number of suicides and also of brain diseases "have been the result of our internment of civilians" is similarly controverted by a review of the actual figures of the cases in question. The number of suicides which have occurred among interned civilians since the beginning has been four only, while the number of interned civilians who have had to be confined in lunatic asylums amounts to 146, or 254 sane prisoners to each lunatic, which contrasts not unfavourably with the latest figures available for lunacy in Germany, being higher than that found in some, and lower than that found in other provinces.

An examination of a few of the cases he mentions as having been treated at the German Hospital during the time he was allowed to remain there, will show that with regard to them also Dr. zum Busch in his zeal for the cause of Prussian Kultur has placed at a discount the reputation for veracity given him by the *Koelnische Zeitung*. I will take two of these where I have been able to satisfy myself that they are undoubtedly the cases referred to, and to verify their residence in the other hospitals referred to. The first is that of a German lady whose case zum Busch uses to illustrate the general English attitude even towards German women and children. His account is as follows: "For this last reason I operated shortly before Easter on a German lady for uterine myomas who had been fully prepared and shaved in an English hospital but left it on the evening before the operation because she could no longer bear the continual irritations and insults of the other patients and even of the staff." The patient (one C.W.) was in the gynaecological ward of a large London hospital. She had been seen privately by the specialist in charge of the ward, admitted by him as his private patient, and for this reason, if for no other, was given special privileges and attention by the sisters and nurses of the ward. "The other women in the ward," so the hospital authorities tell me, "finding C. W. was lonely and out of touch with her surroundings, were very attentive to her, made her little presents from their private stores of biscuits and jam, and tried to reconcile her to her surroundings," but to no purpose. The operation proposed by the specialist was that of hysterectomy, but on the day before it was to be performed C. W. left of her own accord after she had been completely prepared and shaved, saying that she would be operated on at home. Next day (October 25th, 1915) she was admitted to the German Hospital, where Dr. zum Busch curetted her, and she was discharged on November 4th. The curetting apparently did no good, for she had to be readmitted to the German Hospital on April 21st, 1916, when the operation suggested at the first London hospital was performed, and she was again discharged on May 13th. From Dr. zum Busch's account one would think that the shaving and preparation took place shortly before Easter and not the previous autumn, and this is just an illustration of how he perverts the facts in order to make good his story, and to fill the German people with righteous indignation over the iniquities of the English "hypocrites."

Space will permit me to quote only one more instance from the writings of this "trustworthy" personality, so I will take one on which I have been able to obtain the evidence of Dr. von Osten, one of the interned civilians, who assists the medical officer of the internment camp at Douglas, Isle of Man.

Dr. zum Busch gives the following account: "Another man in reduced circumstances suffered from very serious destruction of the hard and soft palate, so that he had to be fed with the pharyngeal tube; when he came to us he had been taken sick in camp, and had remained entirely without treatment. He also was cured by us." From the German Hospital I obtained the case papers of this man. He was one M. S., and was admitted from the Douglas camp on January 15th, 1916. It is absolutely untrue that he was taken sick in Douglas and remained entirely without treatment. On the contrary, Dr. von Osten showed me the hospital books, which are kept consecutively, and could not have been falsified. These show that M. S. was admitted sick to the Douglas camp on March 10th, 1915; that he was either an out patient or an in-patient in the hospital there during the whole of his stay in Douglas; that during the last three months of his stay he was treated entirely as an in-patient; that he was fed there with the pharyngeal tube, and latterly also with rectal injections; and that he received special treatment throughout, which necessitated Dr. von Osten's constant and close attention and the obtaining of special apparatus for giving him inhalants, etc., in addition to the ordinary routine treatment of such cases. In conclusion, Dr. von Osten says: "In spite of all the efforts of von Heycke and myself, M. S. remained discontented and ungrateful; although von Heycke devoted his constant attention to him, he was never pleased; in fact, he was one of the patients whom one could never satisfy, and I was glad when Dr. Marshall at last consented to get rid of him."

British Medical Journal.

SATURDAY, NOVEMBER 4TH, 1916.

TREATMENT OF CARRIERS OF AMOEBIC DYSENTERY.

ATTENTION has frequently been drawn in our columns to the importance of the problem presented by chronic carriers of *Entamoeba histolytica*, owing to the fact that this form of infection, whether following an acute attack of dysentery or discovered apart from any history of dysenteric symptoms, has, in a considerable proportion of cases, proved resistant to treatment by the hypodermic injection of emetine, which has been found so efficacious in acute dysentery by all who have used it since Sir Leonard Rogers published his first papers on the subject in the JOURNAL on June 22nd and August 24th, 1912. The paper by Mr. Clifford Dobell, published at p. 612, affords evidence of the frequency with which contact carriers, as well as convalescent carriers, occur among those who have been exposed to infection in an endemic area, and fully confirms the fact that the ordinary treatment by the hypodermic injection of emetine often fails to free such persons from infection. Just two years ago Du Mez, of the school of pharmacy of the University of the Philippines, suggested the use of a double salt of emetine and bismuth—emetine bismuthous iodide—and gave an account of its mode of preparation and constitution.[1]

It is a brick-red powder, insoluble in water, or water acidulated with hydrochloric acid, and stable in air. According to Du Mez's calculations it contains 58 per cent. of iodine and 12 per cent. bismuth, with 29 per cent. emetine. Insoluble salts of bismuth are converted into bismuth sulphide after passing the pylorus, and in all probability the reaction is very slow, taking place as the compound is spread out over the wall of the intestines. Three grains of the double salt, containing about 1 grain of emetine, seems to be a good average daily dose, and twelve such doses may be given in succession. In the recent trials of the drug recorded by Mr. Dobell the double salt was given in cachets containing 1 grain each, until 36 grains had been taken. Vomiting, if it occurred, usually did not come on until some time after the dose had been taken, indicating probably absorption from the intestine and not from the stomach. It is recommended that the dose should be given after a full meal, when the stomach contents will be certainly acid, and on the whole the drug was well tolerated. Lieutenant Matthews, who had clinical charge of the cases, states that he has found it best to persist with it in full doses, as tolerance is usually established in a couple of days, and more quickly than if the dose is reduced on account of the vomiting.

Mr. Dobell gives an account of a systematic investigation of this double salt used in a military hospital in the hope of freeing carriers of the infection. The investigation has had the enthusiastic co-operation of the hospital staff, and the laboratory work has been carried out with the thoroughness to be expected from a protozoologist of his authority. The conclusion to be drawn is that, making all allowance for uncertainties, due to the limit set to observation by practical considerations, there seems no room for doubt that an advantage is to be gained by administering emetine in the form of this double iodide in these chronic cases of amoebic infection. Other reports on isolated cases, and some interim accounts of further systematic trials have come to hand; and on the whole the results are similar to those recorded by Mr. Dobell. There have, indeed, been groups of cases showing less completely favourable results. Inquiry into some such cases raised a doubt as to whether the patients had really taken the drug; in others the full course had certainly not been given; but when due allowance is made for these sources of error it has to be admitted that a residuum of apparent failures remain. There is, however, no evidence from any source to weaken the conviction that the chance of curing a carrier of *Entamoeba histolytica* with the double iodide is very much greater than with emetine given as any other salt or as ipecacuanha. The curative results have, indeed, been far beyond the original expectation.

On the other hand, the hope that the relative insolubility of the double iodide would prevent vomiting, which was so tiresome a complication of the old ipecacuanha treatment, has not been altogether fulfilled. The vomiting has, in not a few cases, been troublesome; and it would appear that some medical officers have been so discouraged by it as to abandon the treatment. It may be suggested that they exaggerate the importance of an admittedly unpleasant symptom; for those who have persisted in spite of it report, with remarkable unanimity, that in most cases the patient becomes tolerant after a dose or two, and that the improvement the treatment effects in the general health is as striking as, and doubtless dependent on, the disappearance of the amoebic infection. Some detail of administration may, it is hoped, soon be discovered which will remove the difficulty due to nausea and vomiting. Meanwhile, it may be hinted that this effect of the double iodide, as now given, causes in some patients a natural reluctance to swallow the dose, and imposes a special duty on the medical officer, who desires to cure his cases, of seeing that it is actually taken. Cases have been reported in which keeping the men in bed during the treatment, instead of handing them the dose and allowing them to leave the hospital building, has improved the results in a significant manner. It is to be hoped that a relatively trivial drawback will not be allowed to obscure the duty of using every available means for rendering those who have had the misfortune to acquire a chronic infection with *Entamoeba histolytica* free from the danger which this condition entails on themselves and on others, more especially under the conditions of hardship and improvised sanitation inseparable from a military campaign.

It is not to be expected that experience from all centres will show so complete a success with emetine bismuthous iodide as that which Mr. Dobell's paper records. But the resources of treatment are not exhausted when it fails. Some favourable reports have been made of a combined treatment with emetine hypodermically and ipecacuanha by the mouth; it seems likely that replacement of ipecacuanha by the double iodide in this combination might be even more effective. There are other remedies again, such as the Chapparo amargosa of Texas, of which favourable reports come from America, especially for cases of the semi-acute type which have resisted emetine. If the magnitude and importance of the problem created by these

[1] His paper was published in the *Philippine Journal of Science*, January, 1915 (Vol. x, Sec. B, No. 1, p. 73).

carriers are kept clearly in view, and the duty grasped of doing all that is possible to restore them to health and safety before they become distributed into civil life and lost to observation, a satisfactory solution should not be beyond reach.

It should be noted that treatment by emetine bismuthous iodide is useless in infections by *Lamblia* and *Chilomastix*, and that, as a rule, *Entamoeba coli*, which is believed to be a harmless parasite, though it disappears during treatment, almost invariably reappears afterwards.

THE CONFERENCE OF LOCAL MEDICAL AND PANEL COMMITTEES.

The report of the Conference of Local Medical and Panel Committees on October 19th, convened by the British Medical Association, is concluded in the Supplement for this week. It deserves careful consideration not only by panel practitioners and those interested in the working of the insurance scheme, but by all members of the profession. The outstanding feature of the Conference was that it made even more evident than before the desire of the members of the profession actively engaged in the working of medical benefit to make it as successful as possible. So strong was this feeling that the Conference showed itself willing to accept certain conditions, to which some panel practitioners have been disposed to take exception, rather than run the risk of appearing to throw obstacles in the way of adequate medical provision being made for the health of the community under the special strain of war.

The chairman of the Conference and the chairman of the Insurance Acts Committee were able to give an assurance that the new Regulation 3 was only intended to meet the emergencies arising out of the war, and the Conference eventually adopted a resolution accepting the Regulation, with the proviso that "for the year 1917 the new part of Article 3 should be confined to the case of provision for treatment of venereal disease and treatment of disabled soldiers." It requested the Insurance Acts Committee of the British Medical Association to prepare and issue to Local Medical and Panel Committees schemes to include all steps reasonably necessary to be taken by a panel practitioner in order that insured persons may derive full advantage from any service provided under Article 3, and adopted a resolution impressing upon all Local Medical and Panel Committees the supreme importance of preserving the initiative in their own hands.*

With regard to the remuneration of medical practitioners, the memorandum explanatory of the system, which was published in the Supplement to the Journal of October 14th, together with the explanations given to the Conference by Mr. Anderson on behalf of the Commissioners, went far to set at rest many of the doubts that have from time to time been expressed as to the method of distribution of the medical benefit fund. At the same time expression was given to the feeling that the extra work entailed on panel practitioners by the effects of the war constituted a claim for extra remuneration. The attitude of the Conference on this matter was eventually defined by a motion, opportunely made on behalf of the Middlesex Panel Committee by the Chairman of the Insurance Acts Committee, placing on record the opinion of the Conference that, owing to the great increase in the cost of living, insurance practitioners have a claim to an increase of remuneration, and that if such claim be not pressed at the present time this must be considered to be a contribution to the national cause, and without prejudice to the consideration of remuneration after the war.

Many other matters of importance were discussed by the Conference; among them may be mentioned the question of the remuneration of practitioners in munition areas, raised by a motion from Birkenhead. It was alleged that doctors in busy munition areas, though more occupied than they had ever been before, and at greater risk, were not receiving corresponding extra remuneration, but the Commissioners appear to consider that the existing arrangement is not unjust. The Conference, as will be seen, adopted a resolution expressing its opinion that the influx of insured persons in munition areas demands the consideration of the Commissioners with a view to such equitable distribution of funds available for practitioners as will secure to munition areas credits commensurate with their insurance liabilities.

Another matter upon which the Conference expressed a definite opinion was as to the inadvisability of the proposals for the establishment of what is called a State medical service. As representing the practitioners who are working the Insurance Acts the Conference affirmed that the formation of a State medical service would meet with their strongest opposition.

The question of the propriety of establishing a medical trade union, in which some members of the medical profession see a panacea for the difficulties it is encountering and will encounter in the future, did not come directly before the Conference, but it was raised at one point and led to a brisk discussion, which, however, did not do more than disclose the strong difference of opinion already known to exist.

What may, perhaps, turn out to be the most important resolution of the Conference was that in which it reaffirmed the position taken up by the Conference held in 1915 in regarding the British Medical Association as the mouthpiece of the Local Medical and Panel Committees in central negotiations with the Commissioners, and placed on record its appreciation of the work done by the Association for insurance practitioners during the present year. The Association has sometimes had good cause to complain that many members do not study official documents issued to the Divisions and published for general information, and fail to make themselves acquainted with the real facts of any position until it is too late to take effective action, when they turn round and accuse the Association of doing nothing for them. The real fact is that the Association is vigilant in watching their interests, but it is constantly handicapped by the apathy of so many of its members, even on matters which nearly touch their individual interests.

TYPHUS IN GERMAN PRISON CAMPS.

It has seemed desirable to publish an abstract of the report of the Government Committee, of which Mr. Justice Younger is Chairman, on the typhus epidemic which occurred during the spring and summer of 1915 among Russian, French, Belgian, and British prisoners confined in the camp opened by the German authorities at Gardelegen in November, 1914, because there are many evidences that the German Government and the docile medical profession in Germany are trying to persuade neutral and even belligerent

* The conditions for the treatment of venereal disease as defined in the Order of the Local Government Board of July 12th were published in the Journal, July 22nd, 1916, p. 111. Those for Scotland were issued to local authorities and hospitals on October 31st. Although the matter is on a somewhat different footing, it may be well here to call attention to the Order of September 19th, 1916, in which the Local Government Board defined the conditions for carrying out the domiciliary treatment of insured persons suffering from tuberculosis; the operative part of the Order was published in the Supplement last week (p. 123).

public opinion that the official statements proving the mismanagement of prison camps in Germany are either untrue or at least greatly exaggerated. Any medical reader, however, must have concluded from the introductory part of the paper on the clinical aspects of typhus fever, founded by Major Davy and Captain Brown on observations of some 2,000 cases in the camp at Gardelegen,[1] that the most charitable construction to put on the incident was that the administrative arrangements had totally broken down. The only other explanation which has been offered is that the German authorities deliberately set out to bring about conditions under which they knew typhus fever was almost certain to arise. The shivering fright into which they fell when the epidemics did in fact break out discredits this hypothesis, and the more probable explanation is that the outbreaks occurred owing to want of foresight and defective powers of organization, and that when they had thus allowed the evil to raise its head the German authorities were terrified by the spectre threatening their own civil population. When the facts with regard to these outbreaks of typhus fever in the camps in which the Germans herded their prisoners first became known we ventured to assert that the admitted facts were proof of the breakdown of the boasted German organization. Nevertheless, many newspapers in this country continue to speak of the wonderful German organization and the wonderful German foresight. Mr. Curtin, in one of his letters in the *Times*, says that this same belief prevails in the United States, and adds: "My experience of their organization is that it is absolutely marvellous—when there are no unexpected difficulties in the way." He instances what the German newspapers themselves describe as the hopeless muddle about the food regulations, but it may be said without fear of contradiction that the occurrence of typhus fever on any large scale is proof positive of ignorance or muddle. As the German medical profession cannot be assumed to be ignorant of the conditions which lead to the dissemination of typhus fever the outbreaks must have been due to muddle. Of the cowardly abandonment of the sick by which so many German doctors disgraced their profession it is not worth while to say anything. It is not likely that the facts will be allowed to become known in Germany, but the abstract of the report of the Government Committee and the comments by Lieutenant-Colonel Ronaldson Clark on the lucubrations of Dr. zum Busch, late of London, on the British treatment of interned civilian aliens may perhaps afford some enlightenment to the editor of the *Deutsche medizinische Wochenschrift*, who has made himself very active in endeavouring to deny the facts of German mismanagement and cruelty and in inventing charges about the treatment of German prisoners in Great Britain. Mrs. Karen Bramson, a Danish writer, has published a report, quoted in the *Daily Telegraph*, on the conditions prevailing in the prisoners' camp at Gastrow from the end of September, 1914, to the middle of February, 1915. It is founded upon the signed statement of a French army surgeon who was himself a prisoner in the camp. In the stampede every day to get a plate of soup or a morsel of bread, "old men, civilian prisoners, were thrown down and trampled on. Some, too weak to walk, crawled out in the mud to lap out what soup had dropped out of plates, German warders belaboured them with sticks, and sometimes stabbed them with bayonets." The so-called chief surgeon of the camp was a medical student named Dekker, who was in charge of some 20,000 prisoners. Six or eight litres of milk were allowed for 150 patients in the shed which served as a hospital, and the supply of dressings for wounds had run out.

It is added that, as always in Germany, the worst treated prisoners were the English. They had to sell bit by bit every scrap of clothing to obtain food, and when literally naked were taken to the shed called a hospital, where dying men lay on rotten straw eaten up by vermin. The *Frankfurter Zeitung* recently stated that the treatment of English prisoners has now been improved, and this seems to be in accord with the information, as to certain camps at least, received by the British Government through official sources.

[1] BRITISH MEDICAL JOURNAL, 1915, vol. ii. p. 737.

LEGISLATION AGAINST QUACK REMEDIES FOR VENEREAL DISEASE.

WE understand that, on the advice and with the assistance of its president, Lord Sydenham, the National Council for Combating Venereal Diseases is taking steps to ensure the introduction into the present or the earliest possible session of Parliament of a bill having as its object the prevention of the sale or advertisements of quack remedies for these diseases and for the treatment of them by unqualified persons. It realizes the fact that this is an extremely difficult and thorny subject, and it has asked and obtained the co-operation of the British Medical Association in the matter. A subcommittee, consisting of the Treasurer (Dr. Haslip), Dr. Jenner Verrall, Dr. Biggs, and Mr. Bishop Harman, was appointed by the Council of the Association at its meeting last week to work conjointly and in harmony with the National Council, and measures are being taken by means of conferences and otherwise to bring every party which might be affected by the provisions of the proposed bill as far as possible into harmony with the object which it is wished to attain.

MEDICAL CERTIFICATES FOR MUNITION WORKERS.

THE Council of the British Medical Association, at its meeting last week, had before it a letter from the Minister of Munitions stating that it had "on several occasions been brought to his notice by firms engaged on munitions work that some difficulty is experienced in dealing with applications from workmen for leaving certificates, owing to the fact that medical certificates recommending a change of employment for such workmen are in many cases issued by medical practitioners with what would appear to be insufficient consideration." The letter proceeded to point out the extreme importance of the matter from the point of view of munitions work, and asked the Council of the British Medical Association to use its influence with the profession and to draw the attention of medical practitioners to the importance of exercising every care before issuing medical certificates to workpeople engaged on munitions work. The Council at once adopted a resolution urging on all medical practitioners the necessity for the exercise of the greatest care by members of the profession in dealing with applications from workers in munition factories for leaving certificates. We had occasion to mention this matter rather over a year ago. It was then stated that the fact that a doctor might often be placed in a very difficult position when a munition worker who complained of illness applied for a medical certificate was fully appreciated, but the opinion was expressed that the doctor should take care not to allow himself to be used merely to enable a worker to procure a holiday which he might otherwise find it difficult to obtain. The fact that the Minister of Munitions has considered it necessary to call attention to the matter again seems to show that there

must be some practitioners who have not yet fully recognized their responsibility in this respect. This responsibility is very grave, not only to the profession but to the nation at large, which has so intense an interest in the maintenance of the output of munitions of war. In these circumstances we feel bound to call attention to the fact that five years ago the General Medical Council issued a special warning with regard to the giving of medical certificates; a number of examples of such certificates was set out and the warning notice stated "that any registered medical practitioner who shall be shown to have given any untrue, misleading, or improper certificate, *whether relating to the several matters above specified or otherwise* [the italics are in the original], is liable to be adjudged by them to be guilty of 'infamous conduct in a professional respect,' and to have his name erased from the *Medical Register* under section 29 of the Medical Act, 1858." It would be very mortifying to the general body of the profession should the authorities find it necessary to appeal to this pronouncement of the General Medical Council.

MEDICINE IN ROUMANIA.

In the *Chronique Médicale* of November 1st Dr. Severeano of Bukarest gives a brief survey of medical development in Roumania. The first beginnings go no further back than 1847, when a school for surgical assistants was organized by M. Nicolas Cretzulescu, a descendant of the old Roumanian nobility, and a former pupil of the medical faculty of Paris. Owing to the state of the political atmosphere the school had a short existence. In 1853 the Roumanian Government, having need of a medical man to direct the sanitary service of the army, asked the Paris Faculty to recommend a young doctor for the post. In response to this request Dr. Davila was sent. In 1855, in view of the total lack of medical practitioners, he induced the Government to establish a school of surgery. In 1859 this was raised to the rank of a secondary school of medicine, and in 1869 was transformed into a full faculty. A second faculty was founded later at Jassy. Up to that time the practice of medicine in Roumania had been in the hands of foreigners, very few of whom had the degree of doctor; the others had the title of "Magister," corresponding to the French *officier de santé*. But the Roumanian public placed its trust mostly in bonesetters and quacks. There were specialists for fractures and dislocations, for hydrophobia, for eye troubles, for diphtheria, for stone, for sores and wounds, and for headache. For this trephining was done, the operator sometimes making as many as ten holes in search of the collection of blood which he said caused the pain. Jaundice was treated surgically by removal of a small strip of skin from the dorsum of the nose. Vaccination was well organized; it was performed by the arm to arm method by official operators who handed on the function from father to son. According to Dr. Severeano, medicine has made great progress in Roumania. Illegal practice has disappeared, and all official posts are occupied by Roumanian doctors. The exercise of the medical profession is open to all holders of a regular diploma authorizing them to practise in the country where it was obtained. Besides the two faculties of medicine there are an institute for the training of army doctors, a school of pharmacy, several schools for midwives and sanitary officials, and a veterinary school.

"DOCTORS AS MEN OF ACTION."

In an article under this heading which appeared in the British Medical Journal of September 30th (p. 462) the name of Dr. Affonso Costa, the present Portuguese Minister of Finance, was included among the medical men who have in recent years played a prominent part in politics. Dr. H. L. Gordon, of the British Hospital, Oporto, informs us that Dr. Affonso Costa is not a doctor of medicine, but of law, and that he practised as a lawyer in that city. Our correspondent adds to the names given by us that of Van Riebeck, a ship surgeon in the service of the Dutch Company who founded the first colony at the Cape of Good Hope in 1652. It was more or less a medical settlement established for the purpose of combating scurvy, then a scourge of ships making the voyage between Europe and the Indies. It would be easy to extend the list of medical men of action. Joseph Hume, who, though a bore, undoubtedly did much for financial reform, was originally a surgeon in the East India Company service. Sir John Spencer Login, who had achieved considerable distinction as a doctor in the same service held high political offices in the Forties and Fifties; in 1848 he was appointed Governor of Lahore and guardian of the young Maharajah, Duleep Sing. Thomas Henry Wakley, founder of the *Lancet*, and known in the House of Commons as the "Member for Medicine," was an active politician. Lord Ilkeston's political career is within the memory of most of us. Sir James Mackintosh, author of the *Vindiciae Gallicae*, a reply to Burke's famous denunciation of the French Revolution, political philosopher and professor of law, was, like Sir Robert Finlay, originally a doctor. Going further back, there is Johann Friedrich Struensee, the German physician to Christian VII of Denmark, who was the lover of the unhappy Queen Caroline Matilda, and was for a time dictator of Denmark, ending his meteoric career on the scaffold in 1772. Jean Paul Marat, who played a sinister part in the French Revolution, is not a man the profession has reason to be proud of, but he had certainly been admitted *in nostro docto corpore*. Carlyle speaks of him as a "horseleech, once in d'Artois's stables," but he really had been physician to the Guards of the Comte d'Artois, afterwards Charles X, and in 1775 the University of St. Andrews conferred on him the degree of M.D.

DAMPNESS AND COLD.

The physiological bearings of atmospheric humidity are numerous and important, as might be anticipated in view of the wide variations which it undergoes at short intervals. Changes in the hygrometer probably account for far more aches and pains than those of the barometer. In our temperate zones the limits of atmospheric humidity may be taken to be between 45 and 70 of saturation. At the latter figure perspiration is hindered, with consequent impairment of the skin functions and diminution of the excretion of water vapour in respiration. This throws additional work on the kidneys, of which renal patients are apt to be acutely conscious, and the discomfort is enhanced when a low temperature aggravates the "damping" effect on cutaneous elimination. In polyuric subjects micturition is more frequent and the night's rest proportionally more disturbed thereby. The same malevolent influence aggravates the pains of sufferers from rheumatic arthritis and neuritis. Epithelial accumulations, such as corns and cicatricial tissue in general, are somewhat hygroscopic and swell under the action of the humidity, causing increased tenderness and pain. Cold winter air is usually proportionately damper than summer air, though the absolute water vapour content is less, but when the cold air is warmed it becomes uncomfortably dry, and therefore irritating to the bronchial tubes, and this may account for the prevalence of "colds" during the cold season. The dry east wind, which is invigorating to a robust constitution, owes its searching qualities to the fact that its dryness enhances evaporation from the skin, and as heat is absorbed in the process of the transformation of water into vapour a disagreeable feeling of cold may be caused. This feeling of cold cannot be wholly guarded against even by thick clothing, because it is not only the low temperature of the wind that offends, but also the desiccating influence of its dryness, which makes itself felt through the thickest clothing.

DIET AND MENTAL DISEASE.

A recent article by Dr. Charles Mercier in the *Journal of Mental Science* draws attention to the great importance of diet as a factor in the causation of mental disease. With respect to mental disease, the attribution of cause has been, he says, chiefly determined by fashion. Time was when the only causes attributed were sexual excess and syphilis. These were followed by heredity; heredity gave place to toxins, and toxins were followed by repressed complexes on Freudian lines. Dr. Mercier argues that articles of diet should influence the mental health no less profoundly than they influence the physical health, quoting alcohol as a body capable of producing mental disease when it is taken into the stomach. Cretinism and myxœdema may be regarded as instances in which the defect of certain constituents of the blood may cause mental disease. The vitamines, whatever their chemical constitution may be, are essential to the maintenance of both the physical and the mental health. These and other considerations lead Dr. Mercier to conjecture that investigation might discover, in the antecedents of some cases of mental disease, some error in diet that might have a causal connexion with the disease. In his paper he quotes thirty-five cases occurring in his practice in a period of about three years, in which the existence of this connexion appeared more than probable. Only one of these patients could be certified as insane; the other thirty-four were victims of unsoundness or disorder of mind, but not mad, and all came to him seeking relief from mental disease. The peculiarities in diet that preceded and accompanied the mental disorder in these patients were mainly of two kinds—deficiency of meat, or excess of fat, starch, or sugar. Fourteen of the patients were seen by Dr. Mercier only once, and the progress of their malady remains unknown to him. All but one of the remaining twenty-one recovered or very greatly improved when their diet was rectified, and to this rectification Dr. Mercier attributes, with good reason, as he shows, the recovery or improvement. Excess of fat in the diet seems often to lead to severe headache, as was pointed out years ago by Dr. F. Hare, and such excess was present in all those of Dr. Mercier's patients who complained of headache. In addition it gives rise to confusion of mind, and often to severe depression and forgetfulness. It is also to be noticed that the mental symptoms due to excess of fat, sugar, or starch in the diet, which are relieved by diminishing these constituents, are almost always worse in the morning hours, clear up towards afternoon, and are often absent in the evening. Dr. Mercier makes it quite plain that he does not hold every case of mental disease to be due to deficiency of meat or excess of fat in the food. In only a small proportion of the cases does he find any definite fault in the diet. His paper is written with all his customary *brio*, and will be read with pleasure and advantage by very many medical men.

WASPS AND FLIES.

IT has been a matter of common observation that the number of wasps seen during the past summer and autumn has been much fewer than usual, and probably most of us have looked upon their absence as an unmixed blessing. Some recent correspondence in *Nature*, while confirming the belief that there was a great scarcity of wasps during the late summer and autumn throughout England, and at least the southern part of Scotland, puts a rather different complexion on the matter. It is stated that there an unusually large number of queen wasps were seen in the early spring, but the cold wet weather which then ensued either killed them or caused the nests to be very weak. The interesting point is that some observers of the natural history of wasps foretell an unusual prevalence of flies next year, because they believe that the wasp is a great enemy of the common fly. One observer seems to think that the young queen wasps, which come out in early spring too soon for nectar from flowers, live chiefly on flies, and another states that he estimates the number of flies brought into one nest on a bright summer day at two thousand. In a paper read at the last meeting of the British Association, Miss O. C. Lodge said that the best bait for house-flies was a mixture of casein, banana, any sweet substance, and water; and that formalin in water, about 1 in 13, was the best poison, excluding scheduled poisons. She also stated that the best bait for blow-flies was liver, brain, and fish already attacked by maggots, and thus rendered more attractive.

Medical Notes in Parliament.

War.

MESOPOTAMIA.

Statement by Lord Derby.

IN the House of Lords, on October 31st, the Earl of Derby, Under Secretary of State for War, made a statement with regard to the present condition of affairs in Mesopotamia. They had, he said, greatly improved since the War Office took over the task, and he read an optimistic telegram received by the Colonial Office from Sir Godfrey Collins at Basra, dated October 29th. It stated that the last five steamships cleared in twelve days, that each troopship emptied on arrival, that the supply situation was well in hand, and that there was no necessity for anxiety. The difficulty, Lord Derby said, had been to get supplies up the river from the base to the advanced posts. Though what had been accomplished fell far short of perfection, such orders had been given and such preparations made as would, when they had been executed, bring matters as near to perfection as was possible in such a region. General Maude had reported that a dockyard had been established at Abadan for putting barges together, but that the square-ended barges sent out had proved practically useless as they could not pass the Narrows. Barges were what was most wanted, and recently two stern-wheelers and some barges had arrived from Singapore. More barges were on their way and a steady stream of supplies had begun to arrive. On July 20th, the date on which the War Office took over control, the average tonnage carried daily up the river was 222 tons; on October 9th it was 680 tons, and it was expected that by October 31st it would have reached 860 tons. The troops were now getting full rations with few exceptions, but there was a shortage in alternative supplies and consequently the men could not be afforded a choice between one article of diet and another. At present the force was being given fresh meat, but arrangements were being made for supplies of frozen meat. A large additional quantity of motor transport was available and would be sent out if assurances were received that it could be used. As far as was known all the horses required were in Mesopotamia. Clothing had been sent out to meet the needs of British and Indian troops during the winter.

Medical Arrangements.

The fleet of hospital craft had been considerably augmented by using some passenger steamships, and it was now possible to transport the sick and wounded without delay and in reasonable comfort; the number of these vessels was being increased as rapidly as possible. Large floating plant for purifying water was under construction, and would be sent out as early as possible. Some barges with ice-making plant and workshops had already been sent out, and more were being constructed. The ideal had not been reached, but all that could be done to expedite matters was being done.

Early in February the Commander-in-Chief in India was informed that the War Office was fully prepared to afford every assistance in regard to medical supplies and establishments in Mesopotamia or elsewhere. This led to an immediate demand for one hundred officers and a number of assistant surgeons. Forty officers were sent at once from Egypt and sixty from England; all available

surgeons were sent and also non-commissioned officers and men of the R.A.M.C. Further requirements followed, and there had been sent in the form of hospital units to Mesopotamia from that date to the present five general hospitals, five stationary hospitals, one casualty clearing station, three Indian general hospitals, one Indian stationary hospital, one Indian field ambulance, three motor ambulance convoys—a total of 323 officers, 500 nurses, and 2,885 other ranks. In addition, there had been sent 509 R.A.M.C. officers and 1,387 of other ranks, 52 assistant surgeons, 153 native medical personnel, 32 dental surgeons, 22 dental mechanics. Six hundred other ranks of the R.A.M.C. were awaiting embarkation, and 50 medical officers, an additional stationary hospital, and some dispensaries were being sent.

Since the War Office assumed its responsibility large quantities of medical stores had been sent to Mesopotamia, including a base dépôt and medical stores weighing 41 tons, and outfits for the treatment of cases of cholera, and dental, *x*-ray, and pathological outfits. A large quantity of fully-equipped medical units also were sent, with 50 tons of medical stores and 150,000 pairs of special goggles, which were very much in demand there. To facilitate still more the supply of medical stores to Mesopotamia, a base dépôt of double the ordinary size, with over 80 tons of medical supplies, was being dispatched to Bombay.

It was extremely difficult to give any trustworthy figures as to the numbers of the sick. During the period April 27th, 1916, to July 29th, 1916, the admissions of British troops to hospital were said to have averaged 2,739, the deaths 108, and the number evacuated 1,048 a week; but these figures were admittedly incomplete. From August 5th to September 23rd the complete figures of the weekly averages were: Admissions, 1,705; deaths, 39; and numbers evacuated, 738.

The Future.

He was not at all satisfied at present, but hoped that in a very short time he might be able to give a more satisfactory account of the actual delivery of the description of boats urgently required for the transport of the sick. A railway board had been formed, which would act in co-operation with the Indian Engineering Association, to expedite the supply of staff, plant, and material. Although all that was necessary had not yet been accomplished the War Office was determined to put matters on a proper footing. A debt of gratitude was due to Sir Alfred Keogh for the way in which he had met the medical requirements, and to Quartermaster-General Sir J. Cowans and his department, who had shown unceasing activity in putting the force in Mesopotamia in regard to food and supplies in a similar happy position to that which the army in France enjoyed. In conclusion he said that as far as possible entire units in Mesopotamia were being relieved by fresh troops.

The Statutory Mesopotamia Commission, under the chairmanship of Lord George Hamilton, has held further meetings in private. The witnesses examined have been in the main officials and officers concerned with supply and transport. It is stated that it is not anticipated that the taking of oral evidence will be finished before the end of the year.

Military Pensions.—The Prime Minister stated on October 26th that the Cabinet had approved the appointment of a Pensions Board, with a Cabinet Minister at its head. The question of setting up a single pension authority, he said, could not be determined without regard to the distinction existing between pensions and grants which arose only in consequence of the war, and the long service pensions earned both in peace and war, the administration of which might be regarded as part of the regular business of the naval and military departments. The bill which would have to be introduced in order to give effect to the proposal to establish the Pensions Board would be brought in at an early date, but its terms had not yet been finally settled. It would deal, among other matters, with the relation between the new Board and the Statutory Pensions Committee. It is generally believed that Mr. Arthur Henderson—who last August resigned the office of President of the Board of Education to become labour adviser of the Government, and as Paymaster-General to preside over the Board of Chelsea Commissioners—will be the first minister of pensions. Some indication of the magnitude of the work which will come within the scope of the Ministry of Pensions is afforded by the experience of the United States of America, of which we gave some account a few months ago (April 1st, 1916, p. 498). The estimated total number of individuals enlisted on the Union side during the Civil War was a little short of two millions and a quarter; more than half of these were awarded pensions. The number pensioned on account of disability incurred during the war was 565,000, the remainder were pensioned under various Acts of Congress which did not require that in order to obtain a pension the disability must have been incurred directly in the execution of military or naval duty. The Civil War in America came to an end in 1865, but for the fiscal year ending June 30th, 1915, the number of disability pensions in respect of the Civil War was 45,611 and the amount disbursed 16,500,000 dollars. Four years earlier the number of pensions was 113,469, and the amount disbursed 32,000,000 dollars.

Treatment of Disabled Soldiers.—On October 31st Lord Henry Cavendish-Bentinck asked the Secretary of State for War to state whether the duty of restoring the disabled soldier to complete recovery, so far as medical and surgical science could do so, would be undertaken by the War Office. Mr. Lloyd George said that the War Office was charged with establishing an organization for the training and treatment of the disabled soldier, but this would be done by means of a civil organization. The matter was receiving the most careful consideration, but it had not yet been quite definitely decided whether the civil organization would be under the new Pensions Board or separate.

Uncertifiable Discharged Soldiers.—Mr. Forster stated on October 25th that the total number of men discharged from the army owing to the effects of uncertifiable loss of balance was 396, excluding cases in no way due to war service.

Home Hospital Reserve.—The Financial Secretary to the War Office stated in a written answer (October 26th) that the men of the Home Hospital Reserve joined originally for service in hospitals at home. Many of them, however, volunteered for service with armies in the field, and of these a considerable number have been drafted for service overseas in some unit of the R.A.M.C. Those who did not volunteer have been retained at home.

Detained Women (German and British).—Information given by the Home Secretary, in reply to questions in the House of Commons on October 25th, showed that some 12,350 German women with their children had left this country since August 11th, 1914, and that of these 11,200 were returning to Germany. Any German woman now in this country might apply for a permit to return to Germany, and with the exception of five interned under the Defence of the Realm regulations no German woman had been refused permission to return. Lord Robert Cecil said that the attention of the German Government had long since been drawn to the fact that the British Government had arranged for allowances to be paid to the British-born wives of interned German civilians, notwithstanding the fact that the German Government refused relief to the German-born wives of British subjects interned in Germany. It was believed that the number of British women detained in Germany and Austria-Hungary against their will was small, and repeated representations had been made to the German Government as to their refusal for many months to allow British women to leave the occupied districts of France and Belgium. So far as was known, no British women were detained in Bulgaria. Large numbers of women and children of British nationality had left the Ottoman Empire since the beginning of hostilities, and negotiations were proceeding for the release from Turkey of civilians of both sexes.

Indian Prisoners in Germany, Switzerland, and Turkey.—The Financial Secretary to the War Office said that 12 Indian native officers and 667 of other ranks were prisoners in German hands; of these, 2 officers and 7 of other ranks were in Switzerland; 8 Indian native soldiers had been exchanged; 199 Indian native officers and 654 of other ranks were in Turkish hands, and there were, in addition, a considerable number of Indian native soldiers of the Kut garrison of whom no definite news had been received; 6 officers and 1,139 men had been exchanged.

Convictions for Drunkenness.—The Minister for Munitions has circulated the following return of the convictions for drunkenness in the areas under the Central Control Board,

compared with the figures for the corresponding period of last year:

District.	Weekly Average January to September, 1915.	Weekly Average January to September, 1916.
ENGLAND.		
Greater London	1,055	546
Liverpool	155	116
Manchester	83	51
Newcastle	61	39
Birmingham	44	26
Leeds	26	12
Sheffield	22	11
Middlesbrough	30	17
Gateshead	21	12
Total	1,497	830*
SCOTLAND.		
Edinburgh	114	80
Glasgow	505	326
Dundee	60	49
Aberdeen	43	31
Total	722	486†

* A reduction of 44.6 per cent. (males 46.9 per cent., females 38.7 per cent.).
† A reduction of 32.7 per cent. (males 35.3 per cent., females 27.1 per cent.).

Mr. Montagu stated also that in Carlisle the convictions for drunkenness in the fourteen weeks since the middle of July, about which time the Board's scheme of direct control began to be put into effective operation, numbered 183; for the immediately preceding fourteen weeks the total was 380. He also stated that in England up to October 21st the Board had taken possession of 127 licensed premises; 21 of these had by that date been closed for the sale of intoxicants, and 106 were being conducted under the direct control of the Board. In Scotland the corresponding figures were 42, 16, and 26.

Cocaine for Dentistry.—On October 25th Mr. Raffan asked the Home Secretary whether it was in contemplation to extend the general permit enabling unregistered practitioners in dentistry to obtain solutions containing not more than 1 per cent. of cocaine for purposes of anaesthetics beyond October 31st, and, if so, to what date. Mr. Samuel replied as follows: "As the hon. member is aware, I had the advantage of discussing this matter yesterday at a conference with a number of members who are interested in it. As a result of the discussion, I promised to appoint a small committee to make further inquiries as to the use of cocaine by dental practitioners, and I hope to be able to issue an announcement in a few days. Pending these inquiries, the temporary permits issued to unregistered dental practitioners will be extended for a short time."

Tri-nitro-toluol Poisoning.—Mr. Brace stated on October 25th that the number of reported cases of tri-nitro-toluol poisoning for the nine months ending September, 1916, was 95, and the number of deaths 28.

Experiments with Chlorine.—Sir George Greenwood, on October 24th, asks a series of questions with reference to experiments on poisoning by chlorine gas performed by Dr. Flack in the laboratory of the Medical Research Committee, as reported in the BRITISH MEDICAL JOURNAL of December 4th, 1915. In the course of a general reply, Mr. Charles Roberts, speaking for the Insurance Commissioners, said that the experiments were paid for out of moneys provided by Parliament out of the general taxation of the country under the Insurance Act, and that they had been correctly reported in annual returns to the Home Office. The work was sanctioned as a piece of research which was necessary for the solution of certain medical questions of immediate national urgency, in the war conditions of July, 1915, when it was carried out, and was also likely to produce knowledge of the greatest value in medical work for the civil population. The accounts were audited by the Auditor-General, and had been published.

Nurses' Registration.—The Prime Minister has stated that as a bill for nurses' registration on similar lines to that submitted to him by the Central Committee for the State Registration of Nurses would be a highly controversial measure, he could not at present undertake to introduce it.

THE WAR.

THE CONTROL OF VENEREAL DISEASE IN AUSTRIA.

AT a meeting of the Medical Society of Vienna on March 31st, 1916, Professor Finger[1] admitted that there had been a considerable increase of venereal disease owing to the war. Among civilians this increase was first observed in married women of every class, infection coinciding in many cases with the return of the husband on leave. There was also a noticeable increase of the number of unmarried women and girls attending hospital for venereal disease. Again, among lads of 15 to 18 venereal disease had become far more frequent owing to high wages and lack of supervision by their parents. The following table shows the proportion at a hospital of lads to men in 1,000 cases of venereal disease before the war and in another 1,000 during the war.

Age.	Peace Time.	War Time.
15	1	8
16	3	9
17	11	26
18	27	68

A relative increase in the number of extragenital chancres and of cases of vulvo-vaginitis in infants has been noted during the war. Professor Finger believes this to be due to the saturation of the population with venereal disease which was conveyed to children in various ways long before they could acquire it by sexual intercourse. While in peace only 1.8 to 2.1 per cent. of the German army suffered from venereal disease, 6.2 per cent. of the Austrian army were infected. It had been estimated that Austria had mobilized about seven million men, and that from 700,000 to 800,000 soldiers must be suffering from venereal disease. At least a third of these men were married. It had been officially estimated that 80 per cent. of these patients were infected in the interior, while only 20 per cent. were infected on the lines of communication. With regard to the 80 per cent., the problem was one with which the civil authorities had to deal.

By the spring of 1915 epidemics of other infectious diseases had been got under control, but venereal disease was still on the increase both among soldiers and civilians. On July 5th, 1915, the Minister of the Interior summoned a conference, at which measures for the suppression of the disease, to be taken by the civil and military authorities respectively, were settled. It was agreed that the most important measure was the supervision of secret prostitution and the detection and treatment of venereal disease in this particular class of prostitute. In practice the effectiveness of this measure was largely nullified by the lack of detectives attached to the sanitary police (Sittenpolizei). While Berlin employed 200 such officers, Vienna employed only eight; and even these eight were practically useless, for hospital accommodation for the patients discovered by the detectives was totally inadequate. After a few days' arrest infected prostitutes were again let loose on the streets, the only treatment available being ambulatory. On November 5th, 1915, the need of additional hospital accommodation for women was recognized, and in many large Austrian towns it was provided. It was not, however, until April, 1916, that a large hospital in Vienna was to be opened for infected women, with 560 beds, to be increased to 800 in time. The military authorities were urged to examine every soldier for venereal disease before giving him leave and before demobilization, and to hand over those found infected to the army medical service for treatment. On the ground that, though the symptoms of syphilis disappeared under treatment the disease usually relapsed and again became infectious, it was urged that soldiers after discharge from the military hospitals should be kept under civilian supervision at home, in connexion with their medical clubs. The military authorities took action in December, 1915, but it was found that legislation was required to give the civil authorities adequate powers over discharged soldiers subject to relapses of venereal disease.

To show how effective purely educational measures can be, Professor Finger cited the case of a military school, in

[1] *Wien. klin. Woch.*, April 13th, 1916.

which the incidence of venereal disease fell from 2.8 per cent. in 1899 and 1900 to 0.5 per cent. in 1903. During the same period a second military school in the same district showed no fall in the incidence of venereal disease. The striking improvement in the first school was due to its medical superintendent, Dr. Schwarz, who gave the young men a systematic course of instruction in sexual hygiene.

CASUALTIES IN THE MEDICAL SERVICES.

ROYAL NAVY.

Killed in Action.

SURGEON-PROBATIONER A. L. STRACHAN, R.N.V.R.

H.M.S. Genista, a minesweeping vessel, was torpedoed and sunk on October 23rd; all her officers and 73 men were lost, and only 12 men saved. Among the six officers was Surgeon Probationer Alexander L. Strachan, R.N.V.R., the elder son of the late Mr. Alexander L. Strachan, chemist, of Aberdeen. He entered Marischal College, Aberdeen, as a medical student in the summer of 1913; in his third year he volunteered for service on the call for surgeon probationers for the navy, and was appointed to H.M.S. *Genista*. On his way to join his ship he arrived in Dublin in the middle of the rebellion, and had to take charge of a hospital there. He was the recipient of a special letter of thanks and presentation by the officers and crew of a ship which was found in a sinking condition a few months ago.

ARMY.

Killed in Action.

CAPTAIN A. T. LOGAN, R.A.M.C.

Captain Alfred Thomas Logan, R.A.M.C., whose name appeared in the casualty lists as missing on September 16th, has subsequently been reported to have been killed on that date, aged 28. He was the second son of Thomas Logan, of Strathbungo, Glasgow, and was educated at Glasgow University, where he gained the Dr. Gibson bursary, and graduated M.B. and Ch.B., with distinction in surgery, on April 1st, 1915. On April 7th, 1915, he took a commission as lieutenant in the Special Reserve of the R.A.M.C., went to the front with the Grenadier Guards in July, 1915, and was still attached to that regiment when he fell. He had recently been mentioned in dispatches.

CAPTAIN W. R. PAGEN, R.A.M.C.

Captain Wilfrid Robert Pagen, R.A.M.C., was killed in action on October 7th. He was the son of the late Mr. William Pagen, of Whitehaven, and was educated at St. Bees School, Durham University, and the London Hospital, and took the diplomas of M.R.C.S. and L.R.C.P. Lond. in 1905. After acting as medical officer of the workhouse at Cockermouth, Cumberland, he settled in practice in that town, where he was medical officer of No. 1 District of Cockermouth Union. He joined the R.A.M.C. as a temporary lieutenant on December 15th, 1914, and was promoted to captain on completion of a year's service. On October 1st he was wounded in the forehead by a piece of shrapnel (BRITISH MEDICAL JOURNAL, October 21st), but remained at duty, and was killed six days later.

CAPTAIN G. MOWAT, S.A.I.

Captain George Mowat, South African Infantry, was killed in action on October 12th, aged 43. He was the youngest son of Mr. Robert Mowat, J.P., Cambuslang, Glasgow, and was educated at Garnethill School, Glasgow, and at Glasgow University, where he graduated M.B. and C.M. in 1895. He served as a civil surgeon in the Boer war, being twice mentioned in dispatches, and gaining the South African medal. After the war he settled in practice in South Africa. When the present war broke out he joined the Pretoria Regiment as a lieutenant, served in it through the campaign in German South-West Africa, and came to Europe with the South African contingent as a captain in the South African Scottish Regiment.

Died of Wounds.

CAPTAIN C. M. NICOL, R.A.M.C.

Captain Charles Mill Nicol, R.A.M.C., died of wounds on October 23rd, aged 28. He was the second son of the late Mr. John Nicol, of Greenock, and was educated at Glasgow University, where he graduated M.B. and Ch.B. in 1909. He entered the R.A.M.C. as lieutenant on July 31st, 1909, and was promoted to captain on January 31st, 1913.

Wounded.

Captain J. J. Field, R.A.M.C. (temporary).
Captain F. Hitchcock, New Zealand Medical Corps.
Captain H. B. Mustard, Canadian A.M.C.
Captain M. J. Rees, R.A.M.C. (temporary).
Captain R. R. Scott, R.A.M.C. (S.R.).

Prisoners of War.

The casualty lists published on October 30th give the names of a large number of prisoners taken in the surrender of Kut last April, including seventy Indian officers and the following seven members of the Indian Subordinate Medical Department, of whom the two last have been released on exchange: Assistant Surgeons T. Holt, A. Phanre, H. A. T. Wells, F. Aquino, A. Paes, A. L. Gomes, N. P. Shemain.

DEATHS AMONG SONS OF MEDICAL MEN.

Alderson, Alexander George J., Second Lieutenant Machine Gun Corps, youngest son of the late Dr. Alderson of Bournemouth, accidentally killed at bombing practice in the East Midlands, on October 19th, aged 36. He was educated at Epsom College, and at Jesus College, Oxford, where he was an exhibitioner, took second-class honours in the mathematical tripos in 1903, and rowed in his college boat. He was ordained in 1904, and acted as a master at Glenalmond, Bradfield, and Sherborne schools successively. He got a commission as lieutenant on the unattached list on June 13th, 1914, to serve with the Sherborne O.T.C., joined the Duke of Cornwall's Light Infantry as lieutenant in September, 1915, and rose to be captain, but reverted to second lieutenant on joining the Machine Gun Corps.

Clay, Vivian Hastings, Captain Wiltshire Regiment, younger son of Dr. Challoner Clay, of Fovant, near Salisbury, killed on October 18th, on his 24th birthday, after leading a successful attack on the German trenches. He was educated at Epsom College and at Durham University, where he graduated as B.A. in 1914, was in the O.T.C. at both school and college, and afterwards commanded a company of Boy Scouts at Plymouth. He got a commission in the Wiltshire Regiment on April 15th, 1915, was transferred from the reserve to the regular army last May, and promoted to Captain on August 27th. He had been mentioned for conspicuous gallantry in the field.

Corbin, Charles Robert Peel, Second Lieutenant Worcestershire Regiment, elder son of the late Dr. E. E. St. Clair Corbin, of Beckenham, died of wounds on October 21st, aged 23.

Greenwell-Lax, Anthony William, Captain Royal Garrison Artillery, only son of Dr. Greenwell-Lax of West Kensington, killed on October 11th, aged 23. He was educated at St. Paul's School and at Woolwich, and got his first commission on July 19th, 1912. He was in Jamaica when the war began, came home in November, 1914, went to the front with a siege battery in July, 1915, and was promoted to captain in August, 1916.

Lloyd-Williams, Kelyth P., Second Lieutenant Welsh Regiment, only son of Dr. Lloyd-Williams of Llwynbrain, Carnarvon, killed recently. He got his commission on February 26th, 1915.

Menzies, Alexander Laurence, Second Lieutenant, youngest son of the late Surgeon-General Menzies, A.M.S.(retired), of Hawke Bay, New Zealand, died of wounds on September 21st, aged 28.

Montgomery, Edward, Second Lieutenant, son of Dr. Montgomery of Mallow, killed recently.

Palmer, John Stanley, Second Lieutenant Durham Light Infantry, died on October 18th of wounds received four days earlier, aged 26. He was the youngest son of Mr. Thomas Palmer, of East Sheen Avenue, S.W., was educated at King's College, Wimbledon, and entered Guy's Hospital in 1910. He qualified as L.D.S. of the Royal College of Surgeons in 1913, afterwards acting as dental house-surgeon at Guy's. He had served for five years in the Artists Rifles, entered Sandhurst in May, 1915, was gazetted to the Durham Light Infantry in October, and went to the front last May. There he had served as sniping and intelligence officer, and was acting as adjutant when killed.

Robertson, Norman M'Leod, Lieutenant Flying Corps, son of Dr. Robertson of Hamilton, has been killed in action. Prior to the war he was assistant manager in the Philippine Islands to a firm of East India merchants; he came home in July, 1915, and obtained a commission in the Royal Field Artillery, from which he was transferred to the Royal Flying Corps three months ago.

Wallis, Edward Percy, Captain Royal Sussex Regiment, son of Dr. E. P. Wallis, of East Grinstead, killed on October 18th. He was educated at The Wick, Brighton, at Marlborough, where he was for four years in the O.T.C., and at Clare College, Cambridge. He got his commission in September, 1914, became lieutenant on January 7th, 1915, and captain in September, 1916. He went to the front in July, 1915.

Watt, Robert John, Sergeant South African Infantry, only son of the late Dr. T. M. Watt, of Hovingham, died of wounds on October 18th.

Webb, Cyril Gwynne, Lance-Corporal Royal West Kent Regiment, elder son of Dr. Cholmondeley Webb of Margate, killed October 9th, aged 18.

Williams, S. Mervyn, Second Lieutenant Sherwood Foresters, only son of the late Dr. R. H. Williams of Pembroke Dock, killed October 15th, aged 19. He was educated at Llandovery, Plymouth, and St. George's College, Kingsway, entered Sandhurst in January, 1916, got his commission on August 15th, and went to the front on October 4th.

Wilson, Robert Archibald Scarlyn, Second Lieutenant Seaforth Highlanders, elder son of Dr. Scarlyn Wilson of St. Leonards, killed October 12th. He was educated at Hill House, St. Leonards, and at Lancing College, where he was in the O.T.C., and got his commission in August, 1915.

HONOURS.

THE *London Gazette* of October 26th announces the grant of fifteen Victoria Crosses, two of which are bestowed upon medical officers of the Territorial Forces:

Captain William Barnsley Allen, M.C., M.B., R.A.M.C.

For most conspicuous bravery and devotion to duty. When gun detachments were unloading H.E. ammunition from wagons which had just come up, the enemy suddenly began to shell the battery position. The first shell fell on one of the limbers, exploded the ammunition, and caused several casualties. Captain Allen saw the occurrence, and at once, with utter disregard of danger, ran straight across the open, under heavy shell fire, commenced dressing the wounded, and undoubtedly by his promptness saved many of them from bleeding to death. He was himself hit four times during the first hour by pieces of shell, one of which fractured two of his ribs, but he never even mentioned this at the time, and coolly went on with his work till the last man was dressed and safely removed. He then went over to another battery and attended a wounded officer. It was only when this was done that he returned to his dug-out and reported his own injury.

Captain William Barnsley Allen is the only son of Mr. Percy Allen of Scarborough, formerly of Sheffield, where Captain Allen was born. He was educated at St. Cuthbert's College, Worksop, and at Sheffield University, where he gained a gold medal in 1913, and graduated as M.B. and Ch.B., with second class honours, in 1914. After a few weeks' work at the Sheffield Royal Hospital, he joined the 3rd West Riding Field Ambulance as a lieutenant on August 8th, 1914, a few days after the beginning of the war. On September 26th last he was awarded the Military Cross for acts of gallantry on August 14th and 20th. He is at present at home on leave, recovering from wounds. His name appeared in the list of wounded in the BRITISH MEDICAL JOURNAL of October 14th.

Captain Noel Godfrey Chavasse, M.C., M.B., R.A.M.C.

For most conspicuous bravery and devotion to duty. During an attack he tended the wounded in the open all day, under heavy fire, frequently in view of the enemy. During the ensuing night he searched for wounded on the ground in front of the enemy's lines for four hours. Next day he took one stretcher-bearer to the advanced trenches, and under heavy shell fire carried an urgent case for 500 yards into safety, being wounded in the side by a shell splinter during the journey. The same night he took up a party of twenty volunteers, rescued three wounded men from a shell hole twenty-five yards from the enemy's trench, buried the bodies of two officers, and collected many identity discs, although fired on by bombs and machine guns. Altogether he saved the lives of some twenty badly wounded men, besides the ordinary cases which passed through his hands. His courage and self-sacrifice were beyond praise.

Captain Noel Godfrey Chavasse is a son of the Bishop of Liverpool, and a well known athlete, having represented Oxford against Cambridge in the university sports in 1907 and 1908. In the former year he ran a dead heat with K. G. Macleod in the hundred yards race. He graduated as M.A., M.B., and B.Ch. at Oxford in 1912, also taking the M.R.C.S. and L.R.C.P.Lond. in the same year. He was resident medical officer at the Royal Southern Hospital, Liverpool, before the war. He joined the 10th (Scottish Territorial) battalion of the King's Liverpool Regiment as lieutenant and medical officer on June 2nd, 1913, and was wounded a little over two months ago (BRITISH MEDICAL JOURNAL, August 26th). On January 14th last he received the Military Cross.

Flight Lieutenant Colin Roy Mackenzie, R.N.A.S., second son of Dr. and Mrs. Mackenzie, of Bath, was last week awarded the D.S.O. in recognition of his skill and gallantry in destroying a German kite balloon on September 7th under a very severe anti-aircraft fire. It was a large captive balloon on the coast, and was protected by numerous anti-aircraft guns. Travelling at a height of over 13,000 feet, Mr. Mackenzie dived to about 1,500 feet above the balloon, and brought it down a burning wreck. For this exploit, and for accomplishing other dangerous missions for the French, he has also received the Croix de Guerre.

GERMAN PRISONERS' CAMPS.

The King has been pleased to award the Distinguished Conduct Medal to the following non-commissioned officers and men of No. 22nd Field Ambulance, R.A.M.C., in recognition of great devotion to duty and eminent services rendered by them when prisoners of war, during epidemics of cholera and typhus fever at the prisoners of war camps in Göttingen and Ohrdruf respectively: No. 12402 Staff Sgt. T. E. Rondell, No. 170 Actg. Cpl. D. M. Newall, No. 4586 Pte. A. Hazell, No. 8382 Pte. H. Blackman, No. 8653 Pte. J. Canty, No. 8892 Pte. J. I. Robertson.

NOTES.

FEDERATED MALAY STATES HOSPITAL.

THE military hospital maintained at Blackmore End, Kimpton (Herts), by public subscriptions from the Federated Malay States for sick and wounded soldiers has been enlarged by the addition of a new ward containing forty-four beds. This brings the total number of beds available to over 200. A large recreation room is in course of construction. The hospital is under the charge of Captain G. D. Freer, R.A.M.C.(T.), formerly Principal Medical Officer, Selangor, F.M.S. Miss Willis, late of the Royal Free Hospital, is matron.

Ireland.

CLASSES of instruction in child hygiene, directed by a doctor assisted by experienced lecturers, are being organized by the Women's National Health Association, under the Department of Agriculture and Technical Instruction. While the syllabus has apparently been drafted with a view to the training of the volunteers working under approved child welfare schemes, the course should also be useful to the nurse.

The Irvingstown guardians, by eighteen votes to five, have decided to close their workhouse and hospital, and board out the paupers and patients. The saving, after paying full superannuation, is estimated at over £1,000 a year, and it is thought that there would be no poor rate after the amalgamation, the agricultural grant more than covering the cost of the union.

OPENING OF THE WINTER SESSION IN BELFAST.

The winter session was opened in the large hall of the King Edward VII Memorial Buildings of the Royal Victoria Hospital, Belfast, on October 19th, by an address from Professor James A. Lindsay. Sir John W. Byers, chairman of the medical staff, occupied the chair, and there was a large attendance of the medical and surgical staff and of students. Dr. Lindsay welcomed the students to the wards, and observed that the nation was calling for doctors in greater and greater numbers. He emphasized the importance of observation, of hope, of clearness of thought, of steady work in the wards; and drew apt illustrations from the words and deeds of many great men. If students early realized that they were treating not an imaginary entity called "disease" but diseased human beings they would make the better medical men, as their knowledge of human nature and their sympathies would be broader and deeper. When a man came to the end of his working days there was no reward comparable to being able to look back upon a life well spent in the service of his fellow men, and the medical profession offered this opportunity to all who entered it.

Sir John Byers, in thanking Professor Lindsay, on behalf of the staff and students, for his admirable address, said that the Belfast school had endeavoured to do its duty. Of past students who had been traced 180 were on military service, 8 had been killed or died in service, 18 had been mentioned in dispatches, 9 had received the Military Cross, 2 the D.S.O., 1 the C.M.G., 1 the C.B., and 1 the V.C. If more were called for, those at home would do their best to discharge the increased duties laid upon them.

WAR HOSPITAL SUPPLIES.

That the Irish War Hospital Supply Dépôt is doing good work is shown by the demands for its products. One order from Salonica alone—"500 of everything, and how soon can you repeat it?"—swallowed up three months' work at a gulp. Demands are now so pressing that the output will have to be tripled. The dépôt was started in December, 1915, and is affiliated with the joint British, Red Cross, and St. John Dépôt. The head quarters are in Dublin, and there are already more than sixty subdépôts in various parts of Ireland. Practically every penny subscribed goes to purchase raw material, while the articles made are those called for by medical officers. There are four main sections of the work in Dublin—the making of bandages, pneumonia jackets, "treasure bags," slings, cushions, pads, carbolic shirts, etc.; the making of sphagnum moss dressings, the construction of wooden splints, bed rests and so on; and the making of metal splints and other surgical appliances. Nearly two hundred ladies attend at the Dublin central dépôt daily. At the top of the house is the storeroom. Next to this is the room where the garments and other articles are cut out; other rooms are used for sewing these garments, rolling bandages, and making various articles, such as gloves for wrist-drop. From the various departments the completed articles go to the ground floor, where they are put into packages and done up in bales; all this work is done by women. The

house is also a clearing dépôt for articles made in other parts of the city and at the subdépôts in the country.

The work of preparing sphagnum moss dressings is carried on by women in the Royal College of Science. From thirty-four subdépôts in various parts of Ireland come consignments of moss, picked by voluntary helpers, some of them school children. The moss is divided into two qualities, picked to rid it of foreign matter, and then sewn up into packets of different sizes. The wooden cases for dispatch are made by the College Men's V.A.D. Other dressings and bandages are also prepared, and more than half a million swabs, bandages, and dressings have already been made.

Wood-working is done both during the day and evening in the stables of the central dépôt, and here splints, crutches, bed rests, and tables. Many of the tools have been lent by the Department of Agriculture, and the timber and building trade firms have been most generous. Yet another model factory on a small scale is to be found in a doctor's workshop where the metal surgical appliances are constructed. The output from this workshop is already valued at more than £200. Nearly half the material turned into splints is metal that is the waste of the sheet metal trade and damaged wings, panels, and mudguards of motor cars, old baths, carbide drums, and galvanized tanks. A notable feature of the men's work is that some of it is done by men who have been engaged all day earning their living at metal or wood-working trades, which argues considerable self-sacrifice. More practical workmen are needed, but some of the work is within the capacity of those who have some acquaintance with the use of tools and a ready intelligence to grasp the processes going on in the workshop.

Scotland.

A DAIRYMAN was convicted at the Midlothian Petty Sessions on October 24th for failing to notify the police before disposal of the carcasses of two cows which had died on his dairy premises. Both were taken to the Dalkeith slaughter-house, where they were condemned, and it was declared that one of the animals had died of anthrax. A fine of £5 was imposed.

At a meeting of the Lothians Branch of the National Herb-growing Association it was stated that it now had 2,000 members, and although originally started for the purpose of collecting medicinal plants it was prepared to extend its work to the gathering of other herbs, should it be shown that there was sufficient demand. The main difficulty is the problem of drying; a drying shed is to be erected in London, but it is hoped that similar sheds will be erected in other centres. Mr. Guyer pointed out that the work should be done systematically and methodically, and suggested that school children, properly trained and supervised and paid, might be employed in it.

In the report presented by Dr. Maxwell Williamson, M.O.H. to the Public Health Committee of the Edinburgh Town Council, he states that since the outbreak of war the Public Health Department has co-operated with the military authorities in examining billets, in seeing to sanitary arrangements, and looking after men who had returned to Edinburgh on leave suffering from or convalescent from some infectious disorder. The number of soldiers admitted to the City Hospital suffering from infectious disorder was 1,040, and of sailors 60. Most of the cases were scarlet fever or diphtheria. After removal of the patient the house, as well as his personal kit and bedding, were disinfected, and 1,347 wards, rooms, and huts had been so dealt with. In addition, 1,683 disinfecting baths had been given, the clothing being disinfected and cleaned at the same time.

Manual Curative Workshops.

King Manoel of Portugal visited Aberdeen on October 29th, and inspected the Oldmill Military Hospital, particularly the orthopaedic department, which is under the charge of Dr. Chalmers. His Majesty was accompanied by Colonel Robert Jones, of Liverpool. After the inspection Colonel Jones said 70 or 80 per cent. of the casualties which had occurred in this war required orthopaedic treatment, and it was necessary therefore to have some scheme whereby they could have every facility that modern methods could provide. In all parts of the country the idea of the institution of orthopaedic centres had met with a real welcome. He did not think any one would ever know how much this scheme owed to the foresight and constant attention of King Manoel. The King then said he had been appointed by the Red Cross Society to be their representative in regard to orthopaedic work, and he had been working for many months in co-operation with Colonel Jones. The question of manual curative workshops was easy to settle because the only difficulty was to establish them at the places where they were needed, for the Red Cross was willing to instal them and to give the money required to put them at work. If the War Office promised to maintain them, the Red Cross would supply the different hospitals with workshops. It would be an enormous advantage to men discharged from the army or those who went back to active service if in the different places—and he spoke specially of Aberdeen—they could find people ready to give help. At the London Military Orthopaedic Hospital, Shepherd's Bush, although the workshops were not completely installed, more than 300 men were being instructed, and even better results were being obtained, both from the moral and the physical point of view, than had been expected. King Manoel afterwards visited Glasgow and Edinburgh on the same mission.

England and Wales.

Treatment and Training of Disabled Men.

Major Robert Mitchell, director of education at the Polytechnic, Regent Street, and honorary director of technical studies at Queen Mary's Hospital, Roehampton, read a paper on the problem of the disabled soldier at the London School of Economics on November 1st. He declared that the State must take immediate steps, and read a letter from Sir Alfred Keogh as follows:

> You are quite at liberty to say that the Secretary of State for War has relegated to me the problem with which you are dealing in your paper. Next, as president of the Association of Technical Institutions, I know that these institutions can be charged with the training and that, indeed, nothing can replace them. Furthermore, since training and treatment must go on together, this postulates a necessity for unification of the authorities of the technical institutions and of the local hospitals to produce an efficient working system. Since, too, as you have pointed out, the problem varies with the locality, each such combination should work out its own local problem in its own way. Thus a combination of doctors, trainers, employers, employees, and municipal or civic authorities is the first step to be taken, and the sooner that is done on their own initiative the better, so as to be ready when a few details, now awaiting the decision of the Secretary of State for War, are settled.

The disabled man, Major Mitchell said, would need medical advice as to the vocation most suitable for him. When a man had selected a course of training it should not be left to him to decide whether he still needed medical assistance. He should be required to report regularly to his medical officer. No disabled man should be discharged from the army or navy until he was again ready to take his place as a productive unit in the economic system, and in this connexion the claims of young officers who had often given up responsible positions should not be overlooked. They should be helped to qualify as administrators, directors of commerce, and managers of estates. Training and medical committees, working in conjunction with the local authorities and hospitals and technical institutions, should be formed without delay. To these committees should be delegated the power of military control over the men during their training, and the men should be selected and classified for various courses of training by them. The cost of maintenance and training should be borne by the State, and should be regulated by responsible officials appointed by the Secretary of State for War.

The Prince of Wales's Welsh Hospital for Maimed Soldiers.

The Prince of Wales has become the patron of the hospital for maimed soldiers just established at Cardiff, and it will be known by his name. The trust deeds were formally handed over last week, and were received by Commander

Lord Tredegar, R.N.V.R., on behalf of Wales and Monmouthshire. The presentation was made by Mr. J. P. Cadogan on behalf of the donors, and through the generosity of members of the Howell family, who owned the original house, in giving some adjoining property, and of Lord Tredegar in giving the freehold, the site and the buildings on it will come into the possession of the trustees free from all encumbrances. A vote of thanks to Colonel Robert Jones and Colonel Lynn Thomas for the great interest they had taken in the founding of the institution was moved by the Principal of the University College for South Wales and Monmouthshire, and duly acknowledged. Mrs. Gwynne Holford, honorary secretary of the Queen Mary Hospital for Limbless Soldiers and Sailors at Roehampton, also spoke, wishing the Welsh Hospital every success.

Newcastle Scheme of Medical Referees.

The annual meeting of the referees appointed by the Newcastle-on-Tyne Panel Committee was held on September 28th, and a report was presented by the Secretary (who is the clerk of the Insurance Committee) as to the first year's working of the scheme. The referees meet at the office of the Insurance Committee and patients are examined there, patients living in one area of the district being examined by a referee practising in another area. Any panel practitioner, on filling up forms provided for the purpose, may have any of his patients examined and any approved society on paying a fee of 10s. 6d. may also send any of its members for examination, all fees thus received being put into a separate account and distributed at the end of the year amongst the referees. Practitioners or societies receive a report of the referees as to patients sent by them. The report of the first year's working of the scheme states that copies of the scheme were sent to all the panel practitioners and approved societies having members in the city, but it appeared that the larger societies had already made their own arrangements for referees. The Panel Committee provided a urine testing outfit and a practitioner in the city gave a screen and couch. The Insurance Commissioners have asked for information as to the working of the scheme but intimated to the Insurance Committee that no part of the expenses incurred could be borne by that Committee. When females had to be examined it was arranged that a nurse from the tuberculosis dispensary should be present. During the year seven doctors submitted altogether 41 patients, of whom 13 were reported as fit to resume work, 2 fit for light work, 9 unfit for work, 1 too ill to appear, 11 did not appear, and 5 were not asked to appear. In addition four approved societies submitted cases to the total number of 5, of whom 3 were reported as unable to work, 1 was too ill to appear, and 1 was at a convalescent home. The total fees received from societies amounted to £1 11s. 6d., and regret is expressed in the report that more cases have not been submitted by societies. It was resolved to recommend that the scheme be continued for another year.

Correspondence.

MERALGIA PARAESTHETICA.

Sir,—Having read Dr. Rutherfurd's paper (British Medical Journal, October 28th, 1916, pp. 583–4) with much interest, permit me to add a few further observations on this little known condition.

It was first described by Dr. M. Bernhardt (*Neurologische Centralblatt*, Leipzig, 1895, pp. 242–4) in 1895, and is hence often known as "Bernhardt's disease." According to Sherren (*Injuries of Nerves and Their Treatment*, 1908, pp. 289–90) "it is most common in males, and usually arises as the result of injury," though of the three cases I have met with, in none was there a history of injury, and two were in females.

The first occurred in a girl 10½ years old, and was bilateral. The pain was worse when she lay down, and kept her awake at night. There was loss of epicritic and protopathic sensation over the area of skin supplied by each external cutaneous nerve. (Is not Dr. Rutherfurd in error when he states the protopathic sensibility is not affected?)

The second case was in a woman of 25. In her also the condition was bilateral, but was worse on one side than the other; the pain which came on during walking was described as excruciating, and was only relieved by sitting down. The third case was my own, and I can fully corroborate Dr. Rutherfurd's description of the pain, "As though an invisible hand had grasped the thigh and were screwing round a handful of the flesh." The only treatment I have found of any avail is rest and warm clothing.—I am, etc.,

London, W., Oct. 30th. Paul Bernard Roth.

Sir,—Cases like Captain Rutherfurd's meralgia paraesthetica (British Medical Journal, October 28th, p. 583) are much more common in this neurotic age than formerly. It is difficult to assess the neurotic factor with nerve pains. One will run about and work with an occipital neuralgia and other neuralgias, while another will lie down and expect instant death!—I am, etc.,

London, W.C., Oct. 31st. J. Reid.

THE COST OF FOOD.

Sir,—One remedy, where possible, for the present high price of bread is home baking. The *Modern Home Cookery Book* says:

> On the whole it will be found far cheaper and better for health, when possible, to bake at home. The saving in the bread bill is enormous, and the gain in health is also great.

Miss May Byron in her *How to Save Cookery* says:

> The making of home-made bread, from the wholesome nourishment point of view, is the chief economy one can possibly effect. Home-made bread is the best foundation for health—not to mention comfort; and there is no mystery nor difficulty about it as lots of people seem to think.

Three pounds of flour costing 8d. makes a 4 lb. loaf costing 9½d., but there are other advantages—(1) you know what the bread is made of, (2) there is no question of short weight, (3) being less handled the bread is cleaner.

No doubt it is cheaper to manufacture by machinery on a large scale, but it is the object of trade combines to see that the consumer does not get the benefit of this. The consumers' combine is the State, and if we have State public-houses, we might also have State bakeries and dairies; good bread and pure milk are as important as good beer and pure whisky. The State might also control the distribution of wheat; but the fixing of maximum prices would not seem to be of use. Such a law was passed in France in May, 1793; but in spite of an excellent harvest, prices rose to famine height, and throughout the bitter winter nights great queues of shivering citizens huddled in front of the bakers' shops in the hope of securing in the morning a miserable pittance of bad bread. The next year the law was repealed.

A man is said to be at his best on a daily diet containing 4¼ oz. of proteins, 3½ oz. of fats, and 11½ oz. of carbohydrates (sugars and starches); more than this is waste of food, less loss of efficiency: 2 lb. 14 oz. of bread will give the right amount of proteins, but there will only be ½ oz. of fats and 13 oz. too much of carbohydrates. If, however, we take 2 lb. 2 oz. only of bread, 5 oz. of cheese, and 1½ oz. of butter, we shall get the proteins and fats just right and the carbohydrates only 4½ oz. too much. By the aid of Miss Margaret McKillop's excellent little book on food values, recently reviewed,[1] any one can draw up dietaries. Take, for example, a proprietary school, with eighteen children averaging 12 years of age and a resident staff of four women; together they would correspond to fourteen men, and would require each week 25 lb. of proteins, 21 lb. of fats, and 70 lb. of carbohydrates. These may be obtained in many ways, amongst others the following:

Bread, 50 lb.	Potatoes, 20 lb.
Flour, 10 lb.	Green vegetables, 10 lb.
Oatmeal, 12 lb.	Herrings, 4 lb.
Meat, 40 lb.	Other fish, 6 lb.
Milk, 32 quarts.	Cheese, 4½ lb.
Eggs, 2 doz.	Butter, 5 lb.
100 bananas.	Cocoa, 6 lb.
Haricot beans, 4 lb.	Sugar, 4 lb.
Peas, 12 lb.	

One must think twice before saying food values are of no concern to a practical house-keeper. Mr. E. O. Wathen

[1] *Food Values: What they are and how to Calculate them.* London: Routledge and Sons, Ltd. (Price 1s.) Reviewed in British Medical Journal, August 5th 1915

has written a small handbook on poultry keeping called *Winter Eggs;* there is a preface by the Principal of the Royal Agricultural College, Cirencester, which says the book is a thoroughly practical guide. Now, this book contains a great deal about balanced diets, and how to work them out; it would not be right that children should be less wisely fed than chickens.

It will be agreed that it is the province of the housekeeper to see that the meals are suitably composed, skilfully cooked, and invitingly served.

The cost of dietary is not calculated, partly because a great deal of the food would come from the garden, which every school should have; even at Dotheboys Hall there was a garden. The solution of the ventilation problem lies not in cubic feet or electric fans but in open-air life. If goats are not kept, cow's milk will have to be bought; in that case to kill any tubercle bacilli present it should be heated to 140° F. and kept at that temperature for twenty minutes; this will not injure the milk, nor, unfortunately, spore-bearing microbes.—I am, etc.,

London, W. J. S.

THE CLERGY AS HEALTH MISSIONARIES.

SIR,—I feel that I must take some exception to your statement that the clergy, as a body, do not display much interest in health problems.

In the city of Durham, where there is much slum property, the Dean and Chapter paid a good sum for an inspection of the slum property of the town by an expert. The report he drew up was presented to the corporation, who ignored it for many years.

The late Canon Body worked hard amongst all classes in the city and county of Durham when small-pox was rife. He also threw himself into every movement for the improvement of the conditions of the working classes, and was president of a Citizens' League, which provided a lady health visitor, years before the Durham Corporation would undertake such work. The Archdeacon of Durham has always interested himself in social matters, especially in the need of better houses for the working classes. It is only a few years ago that a very long and comprehensive report on the housing question was brought before the Durham Diocesan Conference, when Canon Moore Ede (now Dean of Worcester) was an energetic member of that body.

The late Bishop Tucker of Uganda, when a curate in Durham city, knew much of its slums. Coming back to Durham as a canon, he threw himself into every movement for doing some good to the slum property, and was president for a few years of the Citizens' League. Canon Cruikshank succeeded Bishop Tucker as president of the league, and he had done much good in securing better dwellings for the working classes in the city of Winchester before coming to Durham. I think that Canon Carnegie can know nothing of the work done in the county of Durham, or he would not have condemned the clergy in the manner stated.—I am, etc.,

Ruislip, Oct. 29th. EDWARD JEPSON, M.D.

SOLDIERS AND VENEREAL DISEASES.

SIR,—During the past two years the Liverpool Medical Institution has distributed over 160,000 copies of pamphlets especially written in plain non-technical language for soldiers, warning them of the dangers and disabilities incurred by contracting these avoidable diseases. The army authorities in Egypt have reprinted the tract for their own use. We desire to enlist your support by the insertion of this letter, and invite inquiries for specimen copies from commanding officers, medical officers, chaplains, social workers, and others interested in our soldiers, addressed to the Librarian, The Medical Institution, Liverpool.—I am, etc.,

CHARLES J. MACALISTER,
November 1st. President.

THE young farmer who shot Dr. Glyn Jones of Llansawel has been found guilty of murder but insane.

DR. THOMAS BUXTON, of Fazeley, Tamworth, left estate valued at £24,173. Subject to several life interests, the whole property is left in trust for the building, endowing, and furnishing of a block of buildings to be known as "Buxton's Homes of Rest."

Universities and Colleges.

UNIVERSITY OF CAMBRIDGE.

THE number of medical students who have entered Cambridge this year is 25, showing a further falling off from the 41 who entered in 1915, the 64 in 1914, and the 116 in 1913.

UNIVERSITY OF EDINBURGH.

GENERAL COUNCIL.

SIR J. ALFRED EWING, the Vice-Chancellor, presided at the statutory half-yearly meeting of the General Council of the University on October 27th. Mr. J. B. Clark conveyed to the Vice-Chancellor the Council's hearty congratulations on his appointment as Principal, and Sir J. Alfred Ewing, in his reply, took occasion to refer to the University Court, the Senatus, and the General Council as the Three Estates of the University realm, the Council, or Third Estate, being in a sense the most democratic and certainly the most comprehensive.

Among the matters of general interest in the report of the Business Committee was an allusion to the death of the Lord Rector (Lord Kitchener) and to that of the Rev. Canon Hoernlé, M.B., for more than eighteen years a member of the Business Committee; to the Roll of Honour, from which it appeared that over 5,000 men were now serving King and country and 250 had given their lives *pro patria;* to the number of matriculated students (1,811 for 1915–16), which showed the reduction due to the war; to the admission of women to the medical classes, it being stated that, up to October 16th, 176 women had matriculated; to the action which had been taken regarding the Preliminary Examination Ordinance; and to the Ordinance for the degree of Bachelor of Education, the University of Edinburgh being the second British university to institute such a degree. There were two other matters of special medical interest. One was the institution of the Lauder Brunton Prize in Pharmacology and Therapeutics open to senior students of medicine and to graduates of medicine of not more than five years' standing. The other was the presentation of the report of the Business Committee anent the foundation of a chair of tuberculosis in the University, and the draft Ordinance framed by the University Court in connexion therewith. The Council approved the action of the Business Committee and accepted the report.

It was stated in reply to inquiries that the question of the age limit for principal and professors was still being considered by the Senatus and would be by the Business Committee. Committees were also appointed to consider the question of providing a chapel for the University, and to report on the development of the University after the war in respect of finance, research, new degrees, training in social service, relation to the allies (exchange of students and professors), etc.

On the recommendation of the Senatus, it was resolved that the suspension of class prizes other than those specially endowed should be continued during 1916–17.

UNIVERSITY OF GLASGOW.

GENERAL COUNCIL.

AT its half-yearly meeting the General Council approved the report of the Joint Committee on the ordinance relative to the foundation of a Chair of Ophthalmology, endowed by a sum of £25,000 bequeathed by Dr. Gavin Paterson Tennent for this purpose. The Vice-Chancellor, Sir Donald MacAlister, said that the benefaction, which to the Western Infirmary and the university amounted with accumulations to nearly £40,000, was designed by the trustees of the university for post-graduate teaching, not for under-graduate teaching, it being recognized that to make an ophthalmic surgeon special study was required after the ordinary medical degree had been taken. If the scheme came to fruition Glasgow would have the opportunity of creating a special school of ophthalmology for practitioners who proposed to become specialists. To accomplish this it would be necessary to have a head, a man of high distinction, and a laboratory, and also to utilize all facilities for clinical study, not only in the Western Infirmary but in all the infirmaries in Glasgow. It would be necessary also to have teachers of subsidiary subjects, and the fund would be able to provide salaries for them, since the amount it would yield would be double that proposed for the professor's salary. In reply to Dr. Leask, he said that a diploma in ophthalmology might well be established later.

At the same meeting a report from the Business Committee was received, expre-sing general approval of the ordinance for a degree of Bachelor of Education, but suggesting certain modifications.

The same committee reported that the number of graduates and members of the university serving in the military forces of the Crown was 2,806, of whom 1,359 were graduates; 2,243 were commissioned officers, and the honours gained included 13 D.S.O.'s, of which 12 were awarded to members of medical units, and 38 Military Crosses. The losses had unfortunately been heavy—247 killed, 294 wounded, 12 missing, and 4 prisoners of war. Of the women graduates, no fewer than 684 were registered as willing to undertake war work; all save 30 had been employed, and the demand continued.

NATIONAL UNIVERSITY OF IRELAND.

THE following degrees were conferred on October 16th:

M.B., B.CH., B.A.O.—*T. J. X. Canton, †R. A. Keane, †M. Cooney, M. J. Burns, V. C. Ellis, B. Lagan, J. MacDermott, P. Magner, P. D. Murphy, J. J. O'Brien, J. A. O'Tierney, T. J. Richardson, A. P. Spelman, Teresa J. Walsh.

M.CH.—H. L. Barniville.

* Passed with first class honours.
† Passed with second class honours.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

A COMITIA was held on October 26th, when Dr. Frederick Taylor, the President, was in the chair.

Admission of Members.

The following candidates, having passed the required examination, were admitted Members of the College; Edgar Douglas Adrian, M.B.Camb., James Froude Flashman, M.D. Sydney, and Charles Putnam Symonds, L.R.C.P.

Licences.

Licences to practise physic were granted to eighty-nine candidates who had passed the necessary examinations.

Resignation and Election of Censor.

A letter was received from Dr. Pasteur resigning the office of Censor, as he was about to proceed to France on military service. Dr. Sidney Phillips was elected Censor.

Venereal Diseases.

The following resolutions were passed:

(*a*) That in the opinion of this College administrative measures for the diagnosis and treatment of venereal diseases will only attain their maximum effectiveness in protecting the public health when the treatment of such diseases by unqualified persons is prevented by law.

(*b*) That it is desirable that the recommendations (No. III) of the Patent Medicines Committee of the House of Commons, endorsed by the Royal Commission on Venereal Diseases, should at once be carried into effect.

(*c*) That a copy of the above resolutions be sent to the Prime Minister, to the Home Secretary, and to the President of the Local Government Board.

Anniversary of the College.

The President drew the attention of the College to the fact that the 400th anniversary of the foundation of the College will occur in 1918.

Reports.

A report dated October 3rd was received from the Committee of Management, which announced (1) that the Grammar School, Ilkley, had been added to the list of institutions recognized by the Examining Board in England for instruction in chemistry and physics; (2) that the University of Allahabad had been added to the list of universities recognized by the Examining Board in England, and that graduates in medicine of the university be admissible to the Final Examination of the Board under the conditions of Paragraph IV, Section III, of the Regulations.

UNIVERSITY OF LONDON.

A CORRECTION.

IN the paragraph announcing the award of Entrance Scholarships to the London Hospital Medical College (JOURNAL, October 28th, p. 607), an unfortunate error occurred. The "Price" Science Scholarship awarded to Mr. R. A. Madgwick was of the value of £100, not £50 as printed.

Public Health AND POOR LAW MEDICAL SERVICES.

POOR LAW MEDICAL OFFICERS' ASSOCIATION OF ENGLAND AND WALES.

A COUNCIL meeting of this association was held at the offices, 9, Copthall Avenue, E.C., on October 20th, when Dr. Napper was in the chair.

The Honorary Secretary reported that a provincial member who held a commission in a Territorial regiment had complained that the War Office proposed to deduct from his military pay the salary he was receiving as workhouse medical officer because his infirmary had been taken over by the military authorities, although he was still attending to certain "scattered homes," attendance on which formed part of the duties for which the said salary was paid. The Honorary Secretary had brought the matter before the Central Medical War Committee, and was happy to report that the War Office had decided to permit this member the full benefit of his Poor Law salary.

From communications received with regard to the dispute between the local profession and the Burnley Guardians it appeared that Dr. Campbell, who had been working for the guardians, was about to be called up for military service. The local profession had expressed its willingness to arrange that Dr. Campbell's duties should be carried out provided the guardians reinstated the old district medical officers and public vaccinators, and had undertaken that one half of all the emoluments were to be paid to Dr. Campbell according to the Burnley war scheme, the arrangement to continue for the duration of the war. It was thought probable that the guardians would accept the arrangement.

In reply to his inquiry a medical superintendent of a large provincial infirmary had been informed that the Poor Law orders did not provide for a holiday, but that sick leave could be claimed if necessary. He had also been informed that he could not claim extra remuneration for soldiers admitted to the infirmary in the place of sick paupers, but that he had the right of appeal to the Local Government Board as to the propriety of their admission.

A case was considered in which a Poor Law medical officer who had been called up for war service had been refused superannuation or even the return of his contributions. The Honorary Secretary had pointed out that the length of time for which he had held office did not entitle to superannuation, but that the guardians had power to return his contributions. While approving this advice the council expressed the opinion that it was a hardship that resignations in such circumstances should be regarded as voluntary, since a Poor Law medical officer was practically compelled to resign in order to serve his country.

The Services.

EXCHANGES.

CAPTAIN R.A.M.C., over eighteen months' foreign service, now in charge of corps troops, desires exchange with M.O. on home station, London or home county hospital preferred. Address No. 4199, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.

M.O., Cyclist, Field Ambulance in Kent, desires exchange (base hospital England or France, or R.M.O. France).—Address No. 4350, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.

Obituary.

DR. H. V. HICKMAN died on October 16th, aged 54, at his residence in Wanstead, Essex, where he had practised for twenty-five years. He was educated at the City of London School and at Guy's Hospital, and took the diplomas of M.R.C.S. and L.R.C.P. in 1890, and the degree of M.B. Lond. in 1891. At Guy's he held the appointments of house-physician and obstetric resident and was subsequently ophthalmic assistant for two years. He represented his hospital at many cup ties in the three-quarter line and held the second for the mile at the inter-hospital sports. He was a member of the British Medical Association and had held the office of chairman of the Walthamstow Division. At the time of his death he was anaesthetist to the Walthamstow Hospital and medical officer to the 5th Battalion Essex (Volunteer) Regiment, in the work of which he took the warmest interest. A man of fearless honesty and intense kindness of heart his death is a very keen sorrow to his colleagues and patients.

WE regret to announce the death of Dr. JOHN THOMAS KNOWLES-JONES which occurred at Bournemouth on October 25th. He was for many years in active practice in Brixton and was much respected by all who came in contact with him. He received his medical education at Guy's Hospital, where he was an obstetric assistant. He took the diplomas of M.R.C.S. and L.S.A. in 1868 and that of M.R.C.P.Irel. in 1899; he graduated M.D.Durh. in 1893. Before settling in Brixton he for some years helped his father in his native town of Llanfyllin, Montgomeryshire. He was senior surgeon to the Brixton Dispensary. He retired from private practice some years ago and spent much time in foreign travel. He continued, however, to take an active interest in his profession and was well versed in the topics of the day. He had recently gone to reside at Bournemouth. He was a staunch Unionist in politics, a keen sportsman, a genial companion, and had a happy power of making friends. As a Welshman he was true to the Principality, as evidenced by his activities in many ways, especially in the Cymmrodorion Society and as one of the governors of the Ashford Schools. He was twice married and leaves a widow. His only son, Dr. Orford Jones, died some years ago in New Zealand.

THE death is announced of Dr. JAMES DUNBAR-BRUNTON, well known in the sporting world for his work *Big Game Hunting in Central Africa* and his *Sportsman's Guide to N.E. Rhodesia*. He was the son of the late Mr. John

Stenhouse Brunton, of Ladhope and Hiltonshill, Roxburghshire, and a nephew of the late Sir Lauder Brunton, Bt. He was educated at the University of Edinburgh, where he took the degrees of M.B., C.M. in 1889 and of M.D. in 1910. After practising in England for a few years Dr. Dunbar-Brunton was sent by the Government to N.E. Rhodesia, where he was appointed district surgeon. It was in Africa that he investigated sleeping sickness and became famed as a big game hunter. In 1912 he set up in practice in Heliopolis, near Cairo, and a few months ago went to France to undertake duties at a base hospital. Unfortunately he was stricken with illness and died in the Lariboisière Hospital, Paris, on September 24th, leaving a widow and one son.

Dr. Emile Lagrange, who died at Leeds on October 4th at the age of 92, had for the last two years of his life been an honoured guest of the St. Chad's Belgian Refugees' Committee. He came of an old Flemish family, and was born at Ypres in 1824. After taking his doctor's degree at Louvain he practised his profession in his native city till the German invasion compelled him to leave. He was on the staff of the Ypres hospital for fifty years, and for his public services during an outbreak of cholera he received the Croix Civique; later the knighthood of the Order of Leopold was conferred upon him. During his long life he has been able to watch the whole course of the development of modern Belgium, and as his faculties remained unimpaired till the end his conversation was most interesting. Dr. Lagrange was an enthusiastic botanist, and he cheered the days of his exile by studying the wild flowers in the neighbourhood of Leeds which were brought to him by his English friends.

Dr. Louis Verrey of Lausanne, one of the leading ophthalmologists of Switzerland, who died some time ago, was born at Melun in 1854, and received his preliminary education at Lausanne. He studied medicine first at Erlangen and afterwards at Leipzig, where he took his doctor's degree in 1877. He obtained the federal diploma at Basel in 1879, and studied in London for eighteen months, being admitted a member of the Royal College of Surgeons. On his return to Switzerland he practised for two years at Lausanne, where he was assistant in the Asylum for the Blind. Deciding to devote himself to ophthalmology, he worked under Frederic Homer at Zürich, and then returned to Lausanne, where he got an appointment on the staff of the hospital for diseases of the eye. He qualified as *privat-docent* in 1892, established a clinic, and gained a large private practice, not confined to Lausanne, but extending to Vevey, Yverdon, Fribourg, Vallorbe, Pontarlier, Dôle, and Valence. Such hours as he could snatch from his professional labours he devoted to social and philanthropic work and to music. He was the author of numerous writings on subjects within his special province of practice.

Deputy Surgeon-General Charles Robertson, M.D., Madras Medical Service (retired), died at Bridge of Allan, Stirling County, on September 13th, aged 83. He was born on April 16th, 1833, entered the I.M.S. as assistant surgeon on August 4th, 1856, became surgeon on August 4th, 1868, surgeon-major on July 1st, 1873, and brigade surgeon on August 5th, 1884, retiring with a step of honorary rank on December 31st, 1885. He served in the Persian war of 1857, and also in the Indian Mutiny, when he took part in the advance on Allahabad and Cawnpore, the actions of Fatehpur, Pandu Nadi, Cawnpore, Unao, Basiratganj, Manglawar, and the relief of Lucknow, the second defence of Lucknow, the defeat of the Gwalior rebels at Cawnpore, the capture of Lucknow, and the campaign in Oudh.

Dr. Friedrich W. K. von Ilberg, laryngologist to the Kaiser, died in Berlin on July 9th.

Professor Adolf Weil died on July 25th, aged 68. His most famous contribution to medicine were his studies on infectious jaundice, now commonly referred to as Weil's disease.

Medical News.

A statue to Robert Koch was recently unveiled in Berlin. It shows him in his working dress.

The Prime Minister has stated that the number of British civilians killed, drowned, and wounded by the enemy is—Killed or died of wounds or shock, 589; drowned, 3,410; injured, 1,693.

Mr. Gilbert Barling of Birmingham and Dr. W. Pasteur of London are proceeding to the British Expeditionary Force in France in the course of reliefs of consultants.

Dr. William Allan Jamieson, a former president of the Edinburgh College of Physicians, left personal estate in the United Kingdom valued at £25,077.

A discussion on maternity and child welfare will take place at a meeting of the Royal Sanitary Institute at the County Council Chamber, Durham, on Saturday, November 11th, at 11 a.m. It will be opened by Dr. Harold Kerr, M.O.H. Newcastle.

It is stated in the *Journal of the American Medical Association* of October 7th that operations for sterilization have been performed on thirty inmates of the State Home for Feeble-minded, Chippewa Falls, Wisconsin, by Dr. Alfred W. Wilmarth, head of that institution, under the direction of the State Board of Control.

A commission for the treatment and study of infantile paralysis has been formed at Harvard University. The chairman is Dr. Robert Williamson Lovett, Professor of Orthopaedic Surgery, the other members being Dr. M. J. Rosenau, Professor of Preventive Medicine and Hygiene, and Dr. F. W. Peabody, Assistant Professor of Medicine.

The council of Epsom College Royal Medical Foundation invite applications for a "Christie" pension of £45 a year, and for two "France" pensions of £30 each a year. Candidates must be members of the medical profession who are not less than 60 years of age, and whose income does not exceed £60 a year. Further particulars and forms of application can be obtained from the Secretary, at the office of the College, 37, Soho Square, W.

The dearth of medical men in Poland has become so great that their ratio to the rest of the population is as 1 to 40,000. More than half the medical men previously practising in Poland have been called up for military service, and to remedy the resulting deficiency the German authorities have offered various inducements, such as free quarters and bonuses, to medical men willing to settle in the districts where their services are most needed.

In Germany the stringent army regulations against all forms of quackery have drawn piteous protests from unqualified practitioners of every class. Saxony, the happy hunting ground of the nature healer and the "people's physician," has been flooded with protests against the restrictions on the activities of this motley crowd. In a journal devoted to one of these unqualified specialities it is admitted that even among the "unqualified medical experts" there may be swindlers, but that by the wholesale suppression of unqualified practitioners, the general public is bound to suffer, particularly during the war, which is responsible for the present shortage of qualified practitioners.

The council of the Incorporated Society of Trained Masseuses (157, Great Portland Street, London, W.) states that it has no connexion with the new Institute of Massage and Remedial Gymnastics recently formed in Manchester. The council expresses its regret that a new examining body in massage should have been established, and that the endeavour of three medical members of the society's advisory board to arrange a conference in Manchester with the committee of the Manchester Institute failed. The Incorporated Society of Trained Masseuses was founded in 1894, and states that it has the active assistance of medical men and women in conducting its examination. The examination in medical electricity instituted by the society since the outbreak of war is entirely conducted by members of the medical profession, who also take part in the other examinations in massage, remedial exercises, and for teachers' certificates. The written part of all examinations is held at local centres, and for years a practical examination has been held in Dublin, and more recently, in response to demands, in Liverpool and Manchester.

We are informed by the Lord Mayor's Armenian Refugees Fund that Mr. George F. Gracey of Belfast, who has worked in Armenia under the American Mission for many years, was able to organize the retreat of 25,000 unarmed civilians during August from the zone of danger by Lake Van, to a region of safety 150 miles distant, at

Igdiah. During the spring Mr. Gracey had been entrusted by the Russian authorities with the resettlement of the vilayet of Van. The city of that name, which had 80,000 inhabitants, had lost 95 per cent. of its dwellings, and it was while he was engaged in relief work that the Turkish advance to Mush took place. The only available line of retreat was through the Pass of Berki-kala; as this was not guarded by the Russians, Mr. Gracey armed 250 volunteers with rifles, and the pass was seized. The Russians at Van then drew a cordon across the route, and 1,000 refugees were allowed to pass every two hours. The march continued for five days, the average distance covered by the 25,000 refugees, with their 6,000 cattle, being thirty miles a day. The rations were flour and sugar. The final stages of the march lay through waterless plains, but Dr. Maccallum and Mr. Backhouse, acting for the Lord Mayor's Fund, arranged for the refugees to be met with soup, bread, water and fodder. The refugees are being resettled in Alexandropol, Erivan, and other districts, now occupied by the Russians.

THE scheme for perpetuating the memory of Nurse Edith Cavell by the establishment of homes of rest for nurses has made progress since we last referred to it. A large council has been formed, and an appeal—the text of which will be found in our advertisement columns—signed by Lady Haig, Lady Jellicoe, Miss Florence Scott Cavell (sister of Miss Edith Cavell), Viscount French, Lord Beresford, the Hon. Arthur Stanley, M.P., and Sir William R. Robertson, has been made for donations. The object of the institution is stated to be the establishment of a home or homes of temporary rest for practising trained women, nurses, and probationers who are, or have been, employed in civil or military hospitals, or in connexion with war, or in any other capacity, and have become temporarily in need of mental or physical rest. A freehold house has been offered at Coombe Head, near Haslemere, which would deal with the needs of about a hundred nurses. It stands in about three and a half acres of good garden and lawn land, about 700 ft. above sea level. It is estimated that the annual maintenance cost will be £1,000, and for the purpose of supplying a permanent income of that amount, and a sum sufficient to convert the building into a home of rest a sum of £30,000 will be required. The chairman of the council is Sir Richard Temple, Bt., C.B., and the treasurer is Mr. C. C. McLeod. Contributions may be sent to the honorary secretary of the Edith Cavell Homes of Rest for Nurses, 25, Victoria Street, Westminster, S.W. We believe there is room for such an institution as Miss Edith Cavell hoped to establish. The life of a nurse is very exacting, and the circumstances of very many of them are such as make it difficult to take much-needed holidays.

Letters, Notes, and Answers.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C., on receipt of proof.

THE telegraphic addresses of the BRITISH MEDICAL ASSOCIATION and JOURNAL are: (1) EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London;* telephone, 2631, Gerrard (2) FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London;* telephone, 2630, Gerrard. (3) MEDICAL SECRETARY, *Medisecra, Westrand, London;* telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin.

☞ *Queries, answers, and communications relating to subjects to which special departments of the* BRITISH MEDICAL JOURNAL *are devoted will be found under their respective headings.*

QUERIES.

INCOME TAX.

W. A. raises a novel and interesting point. Last year he "closed" his practice, "getting a neighbour to look after his interests," and applied for a commission but was rejected. He then took a post as assistant, on the advice of the Central Medical War Committee, and the Revenue authorities claim that he is assessable (1) for two months on his old return and (2) for ten months on his salary as assistant. W. A. claims to deduct his continuing expenses in connexion with his home where his practice was formerly situated, on the ground that they are not expenses in connexion with his present earnings.

*** W. A.'s position as assistant breaks the continuity of his average, and he is assessable on his actual receipts and is not entitled to deduct therefrom his private expenses elsewhere. The position with regard to the "closed" practice is more difficult. Some of our correspondent's remarks suggest that he may, in a sense, still be carrying on that practice, through the medium of his neighbour, who has apparently made no profit for W. A. but is looking after his interests. In that event, if W. A. makes an average loss for the three years 1914, 1915, 1916 on that practice, he can set it off against his liability as an assistant. On the other hand, if the ground of claim—that is, that he is still in fact if not in name carrying on a practice—be well founded, he might be liable on an average profit (it all depends on the figures) for twelve months instead of two. On the whole, W. A. may be advised to accept the contention advanced by the Revenue.

LETTERS, NOTES, ETC.

MR. T. A. R. AIYAR, L.R.C.P., L.R.C.S.Edin., L.F.P. and S. Glasg. (Sitiawan, Lower Perak, F.M.S.), writes to state that he has obtained good results in acute pulmonary tuberculosis from the administration by the mouth of two grains of sodium cacodylate thrice a day. Toxic symptoms were not observed in any case.

AGENTS' CHARGES.

LOCUM writes protesting against the demand, which he says is now being made by agents from locumtenents, of 5 per cent. upon the salary received, paid monthly. The agent's fee, he states, used to be a guinea or half a guinea, or at most 2½ per cent. Locum suggests that those who seek posts or who require locumtenents should advertise their wants in the medical journals.

A WARNING.

A CORRESPONDENT who has had an unfortunate experience suggests that it would be well to warn medical practitioners engaging locumtenents to insist upon recent references.

CIGARETTE SMOKING AND IRRITABLE HEART.

DR. PHILIP G. BORROWMAN (Edinburgh) writes that his limited experience leads him to believe that the great majority of young men who suffer from irritable heart have for some months been in the habit of smoking a large number of cigarettes, and that on stopping the habit, or even reducing the number of cigarettes, the symptoms disappear. He suggests that the point is worth investigation by medical officers of military hospitals for heart cases.

TREATMENT OF LARYNGEAL TUBERCULOSIS.

MEDICUS writes: In your issue of September 30th I see that Dr. E. Prest expresses the opinion that my case is "a good example of one of the ways in which tuberculin may do harm." I am no expert, and in my original letter I simply gave my own experience. Perhaps a few additional notes as to after-history and present condition may be of interest. I kept rigid silence for nine months, of which four were spent in Madeira—January to June. No treatment of any kind except open air. At the end of the nine months pain and dysphagia having gone, and objective signs being favourable, I was allowed to use my voice in a whisper. The voice remained a whisper for two years. I then, on the advice of my specialist, saw an expert in voice production. A year previously I had been told that I ought to get back some kind of voice, and that my aphonia was then due in a measure to nervousness and disuse, that if I had a fire in the house and had to shout for assistance I would find my voice. I was a doubting Thomas, but I saw the voice expert. Whether it was due to his technique, or hypnotic powers, or both, I know not, but in half a dozen lessons he did give me a voice of sorts, which has remained with me since. Only those who have been deprived of voice can know what it means to regain it so as to be able to hold communion once more with the kindly race of men.

GASTRO-ENTERITIS DUE TO BACILLUS AERTRYCKE VEL SUIPESTIFER: A CORRECTION.

DR. J. W. MARTIN (Dumfries) calls attention to an error which occurred in his note under this heading in the JOURNAL of October 28th (p. 608). The case there reported was treated six weeks before—that is, during this autumn—not six months, as printed.

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